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REPORT of the PIJI CURRICULUM REVISION COMMITTEE

FOREWORD

In January 1971 the P_1J_1 Curriculum Revision Committee was constituted and asked to review existing guidelines, to examine the data collected throughout the province as a result of Cyclic Review activities, to study current research on child development for the purpose of

(a) recommending revisions for the Curriculum Guidelines for the Primary and Junior Divisions,

(b) developing appropriate support materials for the use of teachers, principals and others;

(c) recommending strategies for the implementation of the changes proposed.

(c.f. Record of Approval, November 23, 1971).

As a result of the reorganization of the Ministry half-way through the life of this committee and the subsequent separation of the curriculum functions, it has not been possible to prepare the materials mentioned in (b) above, nor were we able to attend to item (c) dealing with strategies for implementation.

The four major sections of this document have been developed with due regard for the current conditions in the schools of Ontario, and as a result of a thorough study of the literature and experimental projects dealing with children and how they learn.

At the final meeting of the committee on March 28 and 29, 1973, the fourth draft of the Guide for Developing Curriculum was discussed. The sub-committees responsible for The Arts, Communication and Environmental Studies examined drafts of their reports. This report includes the revisions recommended by the entire committee on the Guide for Developing Curriculum and the final reports from each of the three sub-committees.

As Chairman of the P_1J_1 Curriculum Revision Committee, I am pleased to submit this document for consideration by the Ministry of Education.

J. R. MacLean

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*These members served only part of the 15 months of the committee's existence.

INTRODUCTION

P_1J_1 CURRICULUM REVISION COMMITTEE REPORT

This introduction is intended to show briefly what curriculum is and how it is related to the ways in which children develop and learn, and the ways in which teachers teach.

A. The basic assumptions in this document are these:

- a curriculum is a plan or map for the teacher, not a course or program. It provides the rules, but does not dictate the variety of moves that may be made;

- many different sectors of the community must be involved in defining the aims of the curriculum and in assessing its outcomes for children and for the community;

- teachers, within the framework of general aims and objectives, must have freedom to decide what is best now for the pupils in their classrooms with regard to choice of materials, learning experiences and methods.

B. Curriculum is a cycle or complex system in which every part depends on the other. This is illustrated in the major diagram at the beginning of the document. The aims define the content of what is to be learned. The first question to be asked is WHY certain things should be learned by children. Only then may we ask WHAT they are to learn and WHEN - at what age and in what order - and HOW, by which programs, materials, media or methods. Content is selected from what the community considers is desirable to learn, but also possible to teach. It must take account of the ways in which children learn as well as the disciplines of learning. It must accommodate the needs of society for achievement and competency, but even more, of the individual's emotional, social and intellectual development. The child learns effectively only what he is ready to learn and understand, whatever methods or aims are prescribed. The child will retain, for his personal purposes, only what he wishes to remember and use. Learning must involve a personal commitment, not simply memorizing. It must be seen to have both short and long-term purposes.

The content is useful only to provide learning experiences which are appropriate for the child. The concern is not with what a child knows, in terms of information, but what he becomes, what competencies, skills and values and attitudes he retains from his education.

C. Because the child is the focus, this report begins with a discussion of his nature and needs. This outline of children's development and learning is intended only as a reminder to teachers and administrators of the mass of evidence which is available. It is suggested that they should read further. We emphasize that children learn in many different ways.

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A GUIDE FOR DEVELOPING CURRICULUM

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WHAT IS A GUIDELINE?

These guidelines are for the guidance of teachers and others responsible for the education of children in the Junior and Senior Kindergartens and the Primary and Junior Divisions.

These guidelines:

1. offer a framework of general aims and values;

2. suggest strategies for setting priorities and planning approaches and selecting content for learning situations for children four through twelve years of age;

3. outline the sequences of such choices;

4. suggest possible alternatives to enable the teacher to match the learning situations to the needs of the children and to choose suitable materials and techniques to meet the specific objectives which have to be developed for each board, each school, and each classroom.

These guidelines provide sample situations and content which is presented within a framework of strategies and discussion of the concepts, competencies, attitudes and values* to be acquired by the children in the process of learning. The teacher can use the discussion and examples to select suitable learning materials, extending and adapting as necessary.

* See pages 31-33 for definitions.

WHAT IS CURRICULUM?

Curriculum is all those experiences of the child for which the school is responsible. It is concerned not only with WHAT should be experienced, but WHY, WHEN, WHERE and HOW particular kinds of learning should take place, and the atmosphere in which the learning occurs. Curriculum is concerned with all the human relationships in the school, with the respect in which children are held, with the values, aims and objectives and decisions of the school community.

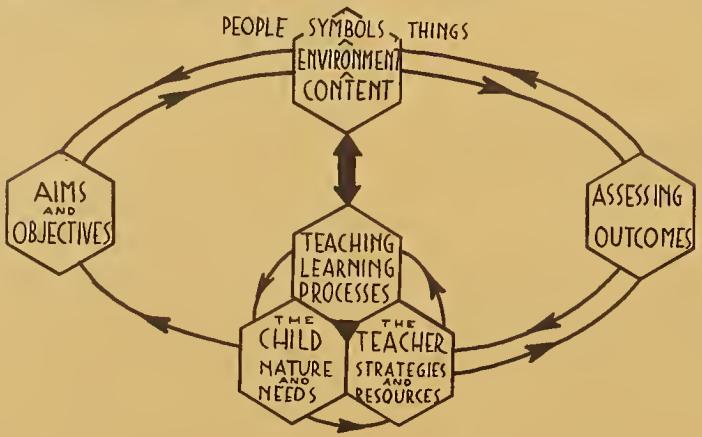
A curriculum guideline is a set of plans and strategies for selecting content which guides learning experiences. It gives rise to a great variety of classroom programs. These differ in materials, media content and teaching approaches but meet similar objectives. A curriculum can never be a specific set of lessons or learning sequences for a particular classroom or school. THERE ARE MANY DIFFERENT PATHS TO REACH THE SAME OBJECTIVE.

Establishing the major assumptions, purposes and outcomes of curriculum is the responsibility of the whole community. These decisions involve not only the teacher but parents, trustees, administrators, the Ministry of Education and the citizens of the province.

AT THE CLASSROOM LEVEL, THE PLANNING OF LEARNING MUST INVOLVE DECISIONS SHARED BY CHILDREN AND TEACHER. It is only the teacher together with the children who can decide from day to day and week to week what are the best decisions to make to meet their particular needs. Specific aims and specific outcomes are related to specific situations and are the concern of the school and the teacher.

Diagram 1

This illustrates the interrelationship of the major components in the development of curricula. This 'system' approach is used as a unifying theme throughout this section of the report.



THE CYCLE of CURRICULUM

THE CYCLE OF CURRICULUM

The curriculum involves a cycle of learning. It consists of these major components:

The Aims and Objectives that are based on knowledge and beliefs about the needs of the child, the way he learns, the needs of society and the role of the school; (see page 34)

The Content is selected from the environment in relation to the aims and objectives and exists to provide significant learning experiences. It is much more complex than mere subject matter or a textbook; (see page 29)

The Teaching-Learning Processes, which are derived from the content, involve the child and teacher with the content in that dynamic, reciprocal relationship which is in fact the only real curriculum; (see page 19), and

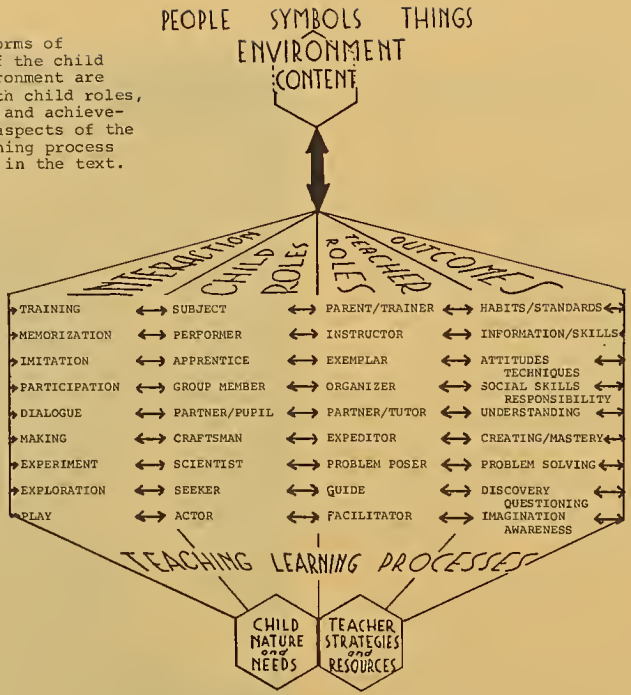
The Assessment of learning outcomes is concerned with the effectiveness of the decisions made and actions undertaken in the teaching-learning experience. (see page 46)

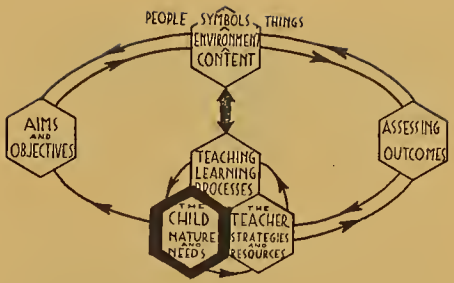
Assessment also provides for evaluation to be made on the relevance and effectiveness of objectives and content so that they may be modified.

The curriculum must take into account the conditions which affect the ways children grow and learn and the conditions which affect the ways in which the teacher organizes her program: the materials, the media and the learning-teaching strategies.

Diagram 2

The various forms of interaction of the child with his environment are correlated with child roles, teacher roles and achievement. These aspects of the teaching-learning process are developed in the text.





THE CHILD: NATURE AND NEEDS

The ways in which a child learns are affected by his general abilities, his specific talents, his styles of learning, and his stage of emotional, physical, and cognitive development. His pre-school experiences strongly influence his learning through setting expectations, motivating, reinforcing particular styles of learning, as well as his use and command of language. The home, particularly parental interest and aspirations, is the most important single influence on achievement. Teachers need to understand the experiences, the values and the language which children bring to school if they are to set goals and select appropriate learning that will harness rather than oppose the influence of the home.

Each child has to find an identity or self-image. He perceives himself as succeeding or failing. To become involved with other human beings in responsible relationships is basic to the whole process of education. Teachers must care for children, be sensitive to their needs, their ways of growing and learning, and show that they care. The sense of being valued as a person, is a basic human need. Children must have their needs for security and self-esteem met before they can begin "learning".

The curriculum must provide sufficient alternative learning experiences and situations to meet individual needs and ways of learning.

Research on the ways in which children develop and learn can only provide guides for the teacher. No single theory can fully account for the diverse patterns of learning in school. The task of the teacher is to find the most appropriate sets of learning experiences to meet the child's current needs, taking into account the child's previous learning, present competencies and skills.

There are many schools of human psychology which try to explain development and learning. Two major emphases emerge. One of these is behaviorist theory. The other is the cognitive-field-developmental group of theories. The behaviorist approach is based on the assumption that learning can be analyzed into stimulus-response patterns. This is essentially habit formation or conditioning based on known laws of reinforcement,

association and repetition. The developmental-cognitive theory attempts to describe behavior and learning in terms of perception, the processing of information and the finding of patterns in experience which involve increasing organization and intellectual complexity.

Behaviorist principles have been successfully applied to "task analysis" of learning, to demonstrate that skills, concepts and understandings can be built up from a succession of simpler skills or sub-concepts. Programmed instruction,* in which a child learns through a self-correcting program arranged in very finely graded and sequential steps, reinforced by being correct nearly all the time, is one example of the application of an aspect of behaviorist principles. The acquisition of habits or simple motor skills can also be explained in this way, but complex visual-motor skills requiring complicated spatial motor and time patterns, such as those found in writing and reading, often require more complex explanations. Although much of speech is habitual and automatic, it is difficult to analyze speech into habit sequence. The way a child learns to use his language can not be explained by simple stimulus-response or imitation theories.

The cognitive explanation seems to be more appropriate in dealing with complex behaviors such as communication, complex formation, reading and problem-solving.

* (c.f. Chomsky, McNeill, Lenneberg)

While the stimulus-response theory suggests a passive and reactive approach to learning in which the child is trained through selection of tasks, repetition and reward, the cognitive theory emphasizes that learning is active and purposeful and the child is an agent in organizing his own knowledge.

Children learn in many ways: through conditioning, habit formation, acquiring skills, learning concepts, developing strategies of reading, thinking and investigation. These require alternative explanations. Some of these are displayed in diagram #3. Until a more comprehensive and compelling theory of human learning is available, the choice of a "theory of instruction" must be based on what seems to work best in the complex, and often confusing, circumstances of the individual classroom or school.

The many different "models" of learning and development have influenced the "traditions of schooling". But often these traditions have continued in spite of questions raised by subsequent research and changes in theory.

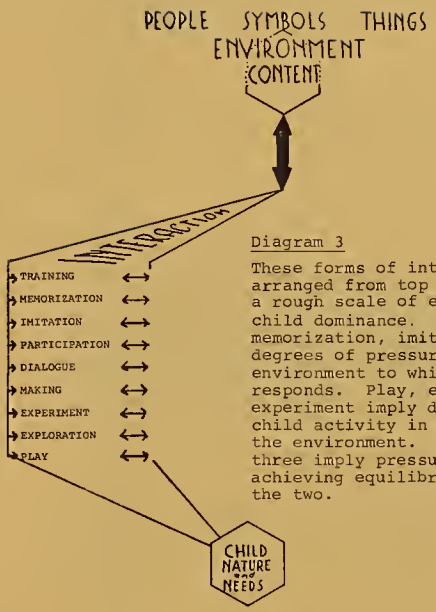


Diagram 3

These forms of interaction are arranged from top to bottom on a rough scale of environment/child dominance. Training, memorization, imitation imply degrees of pressure from the environment to which the child responds. Play, exploration, experiment imply degress of child activity in engaging with the environment. The middle three imply pressures for achieving equilibrium between the two.

A study of the literature on child *development will help teachers to consider the implications of questions like these:

- Do children learn best through activity or do circumstances affect the kinds of learning?

- Are children basically 'good', are they a bundle of primitive impulses that must be controlled or is behavior neutral?

- Should behavior be controlled by external rewards or are these intrinsic satisfactions that reinforce learning?

- How far do children develop according to an inner timetable of intellectual and emotional maturity and how far must they have an appropriate environment?

- What are the factors that might accelerate learning?

- In determining the best moment for learning, how does the teacher choose the most appropriate experience and the best cycle of exploration, identification, application and practice of a concept or skill?

* (c.f. Mussen, Conger and Kagan, Bigge)

The selection of learning experiences will be influenced by these assumptions:

Children are curious. They explore and manipulate the things in their environment that interest them.

Learning is most likely to take place when there is a sufficient discrepancy between what children know or perceive and a new, challenging situation. Maintaining the right balance between novel and familiar experiences in learning is one of the most vital tasks in the whole art of teaching. (c.f. Hunt, Piaget)

There is an intrinsic drive for 'mastery' over situations they encounter when other basic needs are met and the tasks are appropriate and meaningful.

Children respond positively to success in learning, not just to external rewards and approval.

Play is an essential part of learning. There are many kinds of play. In play children can function without being forced to make premature decisions or being penalized for errors. Distinctions between 'play' and 'work' are irrelevant to the child who is fully occupied with learning.

Exploration is a basic stage in many aspects of learning. Incongruity between old patterns and new experiences stimulates question, observation and manipulation. Once learning has occurred there is the need to apply it to a variety of new situations and practice it so that the concept or skill becomes stable and can be recalled.

Children must manipulate and experiment with real things. The more the senses are involved, the more effective the experience.

Much human activity seems to be a purposeful search for pattern. This involves the organization of new information and relating it to previous situations.

Children use their experiences to search out the "rules" of the world which reduce uncertainty and help them to explain and control things in the natural world, in personal relationships, and in language.

CHILDREN LEARN ABOUT AND THROUGH THINGS, PEOPLE AND SYMBOLS. Things may be objects, events, processes and relationships between these. Experiences must deal with qualities; textures, colour, sounds, and with quantities and relationships; size, distance, mass. The ways in which learning experiences are presented can either help or hinder the child in making sense of his world. Learning is based on discriminating, classifying and putting reality in order. Comparing, contrasting, sorting and matching activities are fundamental to writing, reading, science and mathematics.

*Concepts of space and time develop slowly as the child matures and gains experience. The idea of space grows from:

- personal space which is based on movement, purposeful actions and exploration of the immediate environment, to

- action space which comes through patterns of controlled movement and weight; pushing and pulling, balance and momentum, into

- body space which is the position and distance of objects in relation to oneself, to

* (c.f. Biggs, MacLean)

child learning to walk

child in climbing frame dance

- object space which is the relationship between objects, and finally to

- symbolic or map space which enables the visualizing of objects through a picture written perspective or co-ordinates.

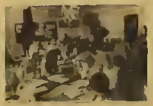
These are amplified in the Arts, Communications and Environmental Studies sections of this report.

Ideas of time begin with personal time; meal times, elapsed time, points in the day and they take years to develop. Reading the clock, often acquired by eight years of age or before, is a very complex understanding but only a very small part of the physical dimensions referred to as "time". Children of the Junior Division should have experiences involving the past and the present which are appropriate to their level of thinking, but full understanding of historical time is usually delayed until age 13 or 14.

The comprehension of concrete relationships; near-far, inside-outside, before-after, class-inclusion, cause-effect, may be within the reach of a 7 or 8-year old child, but appropriate experiences are needed to permit concepts to become stable and available for wider application. Until the end of the elementary school age range, reasoning is concrete and practical; confined to specific relationships involving two factors at a time. Reasoning and learning at the concrete-operational stage can extend well into adult life.

Mastery of causal relationships such as the effect of levers and cogs develops during the age range from 6 to 11. Children who are encouraged to explore, experiment and think for themselves are likely to move faster in forming these concepts. The placement and development of mathematical and scientific ideas in the curriculum should take these factors into account. It is not yet clear to what extent a more effective organization of experiences would enable children to develop the organizing ideas earlier or more fully.

Children can acquire basic and powerful principles such as those of pattern, symmetry, order and similarity, if they are given appropriate learning opportunities. These general concepts are powerful because they can be applied to many different experiences in arts, in movement, in music, in science and mathematics. They continue to develop through organized activities over a span of years.



Through experience and group interaction, not yet fully understood, children acquire or extend the "organizing ideas" or concepts which relate the common and significant aspects of a whole range of experiences. These concepts need not be put in words but they are the foundation of a complicated network of understanding.

Important concerns of children are the concepts of similarity, identity, invariance, number, weight, area, volume, time, speed, substance, estimation, judgment, cause and effect.

The concept of identity is closely related to the idea of conservation and reversibility, that is, that things or processes can be changed but also changed back. The persistence of a substance or thing despite a change in appearance is basic to logical reasoning and to science. This understanding is often not firmly established until age 6 or 7.

The concept of invariance is the realization that relationships remain constant even though properties such as size and shape change. For example, a pattern on a balloon remains the same though larger, when it is blown up. The fact that the number of a collection does not change however the group is rearranged or altered in appearance may not be fully accepted until age 6 or later. The idea of addition in mathematics depends on identity. A similar understanding of mass may not be established until 8 or later.

Area can be understood as a measure of surface by the 9-year old but he may encounter difficulty in comparing irregular shapes with the same size or regular shapes that look different. Formulas for calculating areas must be developed as generalizations from many experiences. The child needs experiences with 3D shapes and many aspects of volume from the early years but volume as a fully developed concept of 'filled' or 'displaced' space is not acquired until about age 13.

The symbolic process in the child develops through a sequence of representation, in which one thing such as a word, gesture, dramatic movement, toy, model, picture or symbol stands for real objects. The development of symbolism underlies the communication, recording and coding of experience in a condensed and systematic form. A major concern of the teacher is to help the child to move from concrete experiences to more abstract forms. He can then organize his experiences much more powerfully and economically. For example, language is one way the child expresses himself, to relate to people, to get information from his surroundings in spoken and printed words, to clarify concepts and to think more effectively by using the powerful logical relationships and the cultural information transmitted by language.

Personal and social development are as important as the intellectual. Children will reach the end of the Junior Division before they can fully imagine themselves in another's position. It is not yet clear what experiences help to accelerate this understanding. Discussion, role-playing and drama may have a positive influence.

Group process is essential in helping a child to compare experiences, see others' perspectives and so form a more objective view of reality.

Important learnings in the area of social and personal behavior are based on the observation and imitation of models who are loved or respected by the child such as the teacher or a parent. These learnings are not confined to attitudes but extend to techniques and ways of perceiving. Membership in a group or community not only provides models for imitation but also gives opportunities to practice the behavior and attitudes that the community finds desirable. Habits of careful work, persistence, attention to tasks, honesty of observation and reporting are stimulated by opportunities to work in a group and meet standards set by the group but accepted by the individual.

Children appear to move through successive stages of moral and ethical understanding. The 5-year old has very concrete ideas of behavior and punishment related to specific situations. Rules are imagined as being made by others.

Gradually, through the Primary and Junior Divisions, children develop practical ideas of loyalty and understanding group relationships. These behaviors are not necessarily consistent or according to general principles. Rules are seen as agreements within the group, but authority is still external. Development of values may be beyond the elementary school level. Ethical development does not necessarily coincide with the development of conscience.

A major purpose of education is to help the child to move away from reliance on external approval and control so that he can develop intrinsic values and incentives which are consistent with his own purposes as well as those of society.

Other aims involve not only practical but emotional and intellectual independence. The curriculum can contribute to independence by organizing social and work experiences that involve decision-making, working independently and choosing and successfully carrying out appropriate tasks.

Learning must be significant, relevant, and purposeful if it is to be acquired effectively and retained for future use. This is true whether the child is discovering an idea for himself, memorizing details or routines, or practising a technique or skill.

Children's interests guarantee an early involvement which leads to satisfactions in learning, which, in turn, stimulates informed interest that leads to further learning.

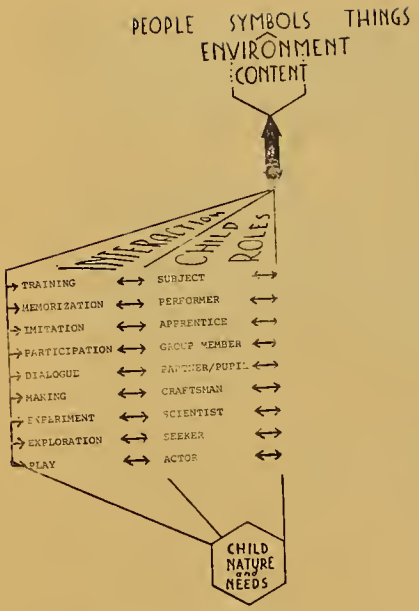
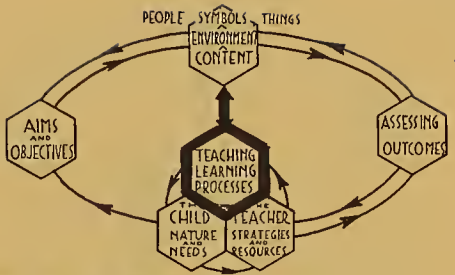


Diagram 4

This illustrates the varied responses and roles of children in learning.

Learning experiences are made much more powerful if they are part of organized and meaningful wholes. This should involve the desired personal responses and attitudes as well as cognitive learning. The teacher has a vital role in nurturing the self-confidence of children so that they will become life-long learners.

The teacher should create environments which enable children to manipulate, question, discuss and practice. The teacher will apply his knowledge of children's development and learning through sympathetic observation of children. Together with the children, he must set the feasible goals, the appropriate sequences, the learning conditions and the acceptable levels of performance.



THE TEACHING-LEARNING PROCESSES

The assumption here is that teaching and learning are based on continual INTERACTION between teacher and child in which both are partners. In effective learning, whoever makes the first move finds that the other is ready to respond. The child will indicate his needs, readiness and capacity through his questions and behavior. The teacher must take responsibility for the general purpose and direction of learning through organizing variety and choice in the learning sequence and materials.

Many conditions affect the teacher's function in arranging and facilitating learning. They involve the following:

1. the choice and organization of materials, media and content in order to create learning conditions;

2. the use of time and the planning of time for various aspects of learning;

3. the planning of the use of space within the teaching area to make the best use of materials and situations;

4. the decisions made about types of learning: INDIVIDUAL, GROUP OR CLASS LEARNING.

5. the decisions about the organization and grouping of pupils;

6. the preferred style of the teacher and his repertoire of skills;

7. the making of learning more economical and systematic in the sense that the child is helped to perceive meaning and relevance.

To call education "child centred", "subject centred" or "teacher centred" or to oppose "discovery" to "direct instruction" is to think in slogans. The characteristics of the child must guide learning. Even the most specifically defined and sequential program is relevant only to the extent that the child perceives the learning situation and responds in his terms. In this sense all education is "child centred".

ALL GOOD TEACHING AND LEARNING HAVE MANY FACETS AND DEMAND A VARIETY OF APPROACHES.

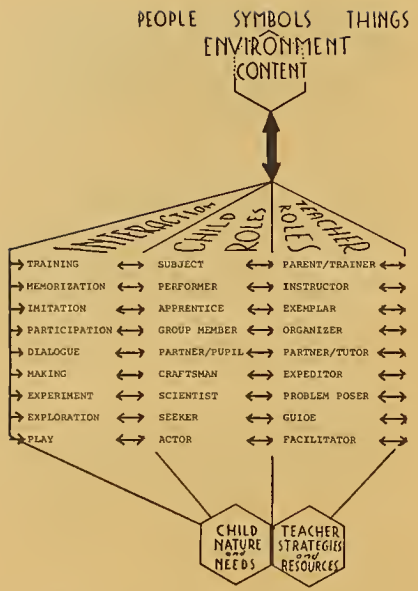
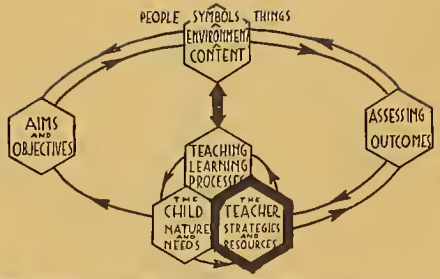

PEOPLE SYMBOLS THINGS
ENVIRONMENT CONTENT
INTERACTION
CHILD ROLES
TEACHER ROLES
TRAINING ↔ SUBJECT ↔ PARENT/TRAINER ↔
MEMORIZATION ↔ PERFORMER ↔ INSTRUCTOR ↔
IMITATION ↔ APPRENTICE ↔ EXEMPLAR ↔
PARTICIPATION ↔ GROUP MEMBER ↔ ORGANIZER ↔
DIALOGUE ↔ PARTNER/PUPIL ↔ PARTNER/TUTOR ↔
MAKING ↔ CRAFTSMAN ↔ EXPEDITOR ↔
EXPERIMENT ↔ SCIENTIST ↔ PROBLEM POSER ↔
EXPLORATION ↔ SEEKER ↔ GUIDE ↔
PLAY ↔ ACTOR ↔ FACILITATOR ↔
CHILD NATURE AND NEEDS
TEACHER STRATEGIES AND RESOURCES

Diagram 5

This links the role of the teacher to that of children in learning.



THE TEACHER: STRATEGIES AND RESOURCES

A curriculum does not require a school to be organized in a particular way. It is the aims and the scope of learning which should determine the pattern of organization, such as grades, vertical grouping, age groups or the various kinds described as 'open plan'. Similarly, curriculum does not commit a teacher to use specific methods or materials but assumptions about learning do affect:

- the structuring of teaching groups;
- the organization and use of time;
- the use of differentiated teaching spaces;
- the selection and application of resources.

Conversely, choice of certain forms of teaching, grouping, and resources must affect how the curriculum is interpreted.

The fact that teaching and learning occur in a group situation necessitates the effective organization of people, time, space and materials.

Organization of Learning Groups

If it is believed that children have individual needs and styles of learning and profit from working individually and in groups of various size, it becomes necessary to plan a variety of tasks for different groups of children.

MUCH OF THE ACTIVITY DESCRIBED IN THE THREE SECTIONS OF THIS GUIDELINE CALLS FOR THIS KIND OF ORGANIZATION. Different children need to be helped to carry on quite different activities at the same time and to move through a sequence or pattern of tasks throughout the day. This frees the teacher to apply his time more effectively to the carying needs of individuals and small groups.

Organization for this kind of learning features:

(i) individual children working on their own with appropriate materials, such as assignments, inquiry, research, practice or memorization or use of programmed materials. This will allow the teacher or adult volunteer to provide regular and individual attention;

(ii) working groups which are chosen by the children or suggested by the teacher. From two to five children work together on a reading or number game, carry out an experiment, make a model, help one another to research a topic, or play together in the house corner, the dress-up corner or store;

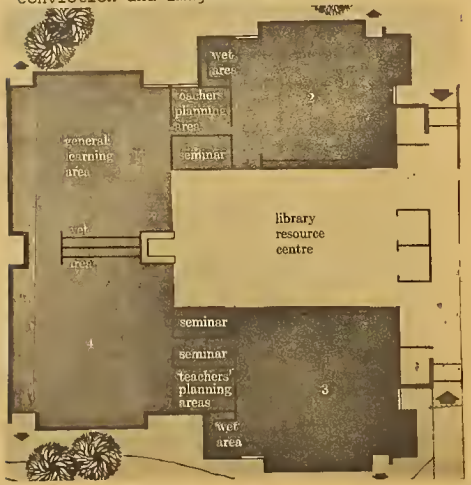
(iii) teaching groups which are larger and useful for separating children according to some criterion of ability or need. These may be needed for special reading skills or some aspect of mathematics. Larger groups of this kind may also be teams for dividing up work in Environmental Studies or Drama.

(iv) whole class groups are useful for activities such as planning a project, reviewing the day's or week's work if much of the time has been spent in individual or group work, story telling, physical education, and drama. For these last two areas, the children will often work individually, in pairs, or in small groups.

If the special needs of slow-learning or handicapped children are to be met, a variety of organizational arrangements needs to be considered.

To accommodate a wide range of abilities in a varied and flexible program, groups need to vary both in size and composition. They should last only as long as needed. They may be organized on ability or achievement level for purposes of teaching specific skills. But they can often include chidren of mixed abilities but shared interests. Groups can include younger and older, more and less able. The younger or less able can be helped by the teacher and the group to make their contribution; the older and brighter can assist the others and reinforce their own learning. In this "across-age tutoring" both gain intellectually and socially.

Some schools may go further and bring together two or more classes or age groups, either within a conventional classroom or to take advantage of new forms of teaching space. Most of the constraints on grouping practices exist only in the minds of teachers. The physical features of different school buildings can accommodate practically any form or size of group if the problem of matching space and people is tackled with conviction and imagination.



The Organization and Use of Time

Because time is the major resource of the curriculum, this scarce commodity must be well spent.

The allocation of time and the planning of learning experiences must go hand in hand. Learning from real life situations, exploration and inquiry cut across traditional subjects and fixed periods of time. Children, particularly in Arts and Environmental Studies, will make choices and be engaged in tasks and topics which impose their own rhythm of time. An experiment in mathematics or science may take a whole morning or longer. A project as a whole may extend from two weeks to a full term. In contrast, practising spelling, handwriting or computation will require short intensive periods of from five to a maximum of thirty minutes.

In planning the program and allocating time, the teacher should avoid:

- cutting learning up into short sections;

- requiring that lessons go on when the children are bored or unprepared;

- ignoring unexpected opportunities that arise to widen the scope of the children's interests;

- forcing children to suspend or delay the satisfaction of finding an answer or seeing a pattern.

A schedule is needed for planning:

- the use of shared facilities such as a music room, gymnasium, home economics or industrial arts rooms, a stage;

- the use of specialist teachers on rotary schedules;

- the sharing of time between the various aspects of the curriculum according to the agreed aims of the school;

- if it is accepted only as a guide, to be altered as the need arises.

Plans for the effective use of time should note that:

- there is no evidence that any particular aspect of learning should always occur at a specific time during the day;

- it seems highly inefficient to spend time in small periods allocating the same amount to each area of learning;

- it is practically impossible to predict the time each child needs, or can cope with, for varying tasks or different experiences.

- with the kind of curriculum outlined in this guideline, it is unlikely that a day could have more than a general overall pattern related to individual children, differing programs and large blocks of time.

Teachers will have different approaches to planning the use of time. Some prefer to use the morning for activities the children choose, for long-time projects, or for language and mathematics with the afternoon being used for small group work on different tasks such as individual practice and remediation. Others prefer to set aside large blocks of time at different periods in the day for major activities in ARTS, COMMUNICATION OR ENVIRONMENTAL STUDIES.

As far as possible, learnings which reinforce one another should occur close together. For example, learning a new concept and then applying it in a variety of situations such as reinforcing measuring through model or map making, using writing or painting to record an experience, following up writing with spelling or using a dictionary. Children who have been motivated through their own identification of difficulties will cheerfully practice reading, writing and arithmetic.

Balance between areas of the curriculum and kinds of learning should be examined over a week, a month, or a term, but not within a day.

Responsibility for planning acitivities and using time should be shared with the children.

DIFFERENTIATING TEACHING SPACE

The kinds of learning described here make quite specific demands for varieties of teaching space, different uses of space and ready accessibility to a rich variety of resources. Children need a variety of work places and working positions:

- standing to observe and experiment or participate in drama

- sitting quietly to write and to read

- kneeling or working near floor level on models or charts.

They need different kinds of working surfaces and conditions:

- moveable for experimental work in mathematics and science

- work benches for the use of tools and materials

- sink and water supply along with suitable surfaces for wet and messy work such as sand and water trays

- easels for painting

- a quiet area for reading and using other resources

It has been said that "space must have a geography". This means that the books, the tools and the supplies must be so arranged and organized that children can find, select,

use and return them efficiently. The variety of materials and experiences needed by children in active learning requires considerable space. Bays or learning centres can be established for specific purposes:

- materials and apparatus needed for maths and environmental studies;

- raw materials and tools for the technical corner and the expressive arts; a wet-dry area for paint, clay and similar materials;

- a quiet corner with books, magazines, pictures, headphones, cushions, chairs, carpet for listening, reading, recording;

- ready access to the outdoors. The area adjacent to the classroom should be an extension of the learning centre to provide for experiments, keeping plants and animals, moving about freely;

- an area for imaginative play or for the development of drama or for large group discussion and story telling.

Space, surfaces, storage and materials should meet the requirements imposed by the organization of materials, of groups of children, of learning situations and of time. Teachers should view teaching space as a system of:

(i) learning areas that provide access and good conditions for different kinds of learning and for different sizes of groups, and

(ii) a collection of horizontal and vertical working surfaces at the right height for children, including areas for the display of children's work.

Furniture is part of this system and should have the potential for flexible use such as:

- different surfaces and different levels capable of being formed into larger working surfaces for groups of 2, 4 or more children;

- portable dividers and cupboards to enclose and subdivide space into learning areas with good use being made of both sides for storage or display;

- workbench and other tables with durable and easily cleaned surfaces;

- storage units, racks of tote boxes, large portable bins or trolleys, shelving and ample vertical display spaces will help solve the problem of maintaining a large stock of materials and the need to display work effectively at the eye level of the children;

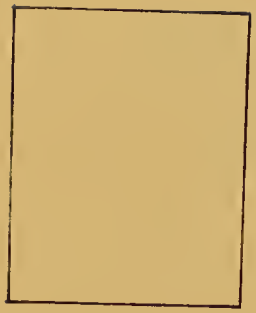
These spaces are in addition to the public spaces of the school such as the gymnasium which is required for physical education, for expressive movement and dance and possibly for dramatics with older children. It should be emphasized that space should not be labelled for a particular purpose or area of study and used inflexibly. Imaginative use of all resources - people, time, space and materials is the hallmark of a superior teacher.

	THE ARTS	COMMUNICATION	ENVIRONMENTAL STUDIES
SPACE	LARGE SPACE FOR DRAMA/MOVEMENT AND/OR HOUSE-CORNER SCHEDULED OR BAFFLED AREA FOR MUSIC FLAT OPEN SPACE WITH OPPORTUNITIES FOR [illegible], CLIMBING, CRAWLING, BALANCING, PLAYING GAMES WET MESSY AREA: WATER, SAND, CLAY, PAINT CRAFT-TECHNICAL AREA FOR MAKING AND EXPLORING THINGS	LARGE SPACE FOR DRAMA; DISCUSSION BAY FOR HOUSE/IMAGINATIVE PLAY, PUPPETRY QUIET STUDY AREA/WRITING AREA LIBRARY-RESOURCE AREA SCIENCE/MATHS AREA "STORE"/MEASURING WEIGHING BAYS	SCIENCE AREA FOR SEVERAL SMALL GROUPS AND/OR MATHS AREA QUIET STUDY AREA LARGE GROUP AREA FOR DISCUSSION, PLANNING, HOMEBASE TECHNICAL-CRAFT AREA STORAGE AND STUDY AREA FOR ANIMAL, PLANT SPECIMENS
STORAGE	RACKS, VERTICAL SURFACES FOR TOOLS. LARGE TROLLEYS AND BINS FOR MATERIAL. BOXES, LEVELS, PLACE TO MOVE FURNITURE IN CLASS CUPBOARDS, DIVIDERS, TOTE BOXES	CUPBOARDS, DIVIDERS, SHELVES FOR BOOKS, PROPS LARGE TROLLEYS AND BINS FOR MATERIALS SHARED WITH ARTS, ENVIRONMENTAL STUDIES SHELVES FOR PROJECTORS, TAPE RECORDER, RECORD PLAYER	SHELVING, DEEP CUPBOARD FOR SCIENCE/MATH EQUIPMENT HOOKS AND RACKS FOR EQUIPMENT (REAR OF DIVIDERS) ACCESS TO REFRIGERATOR FILING STORAGE FOR VARIETY OF PAPER, FOR MAPS RACKS FOR REFERENCE BOOKS, PIGEON HOLDES FOR TAPES, FILM STRIPS
SURFACE	OPEN FREE SPACE, POSSIBLY SMALL, MOVEABLE BOX UNITS/ LEVELS FLAT TABLES, DIVIDING FURNITURE LARGE AND SMALL AREA TABLES, EASELS, WATER-RESISTENT SURFACES, SINK, EASY-CLEAN SURROUND WORKBENCH, RACKS DIVIDERS FOR TOOLS OR ROUGH SURFACES	OPEN FREE SPACE WITH MOVEABLE, STAGE UNITS, SCREENS SMALL TABLES FOR 2-4 CHILDREN, FLEXIBLY DISPOSED ENCLOSED SMALL AREAS FOR INDIVIDUALS, SMALL GROUPS EASY CHAIRS, CARPETED AREA, BOOK SHELVES AND BOOK STORAGE ON REVERSE OF DIVIDING FURNITURE FACILITIES FOR PROJECTION - WALL, SMALL SCREEN	WATER AND WEAR RESISTANT, FIXED SURFACES AND FLEXIBLE TABLES FOR 2-4 CHILDREN. FLEXIBLY-ARRANGED TABLE SURFACES FOR 2, 4, 8 CHILDREN IN GROUP BINS AND TROLLEYS WITH MATERIALS

Comparison of the requirements of the three areas - THE ARTS, COMMUNICATION AND ENVIRONMENTAL STUDIES shows that while they have their unique needs, they can share or compromise on space and resources. The integration of activities allows different resources to serve many purposes and reinforces one aspect of learning through another as when the rich resources of the expressive arts or environmental studies serve the purposes of communication. The classroom for younger children should be less differentiated and share more areas such as the sand and water area with mathematics and science.

These are heavy demands to make on individual classrooms, each closed off from the next. The need to provide for various modes of learning raises the necessity of sharing resources between rooms so that the total area can offer the different learning centres needed. The sharing of areas or 'open space' can be effected with various modifications in schools of any age or design. It is not the architecture that counts but the need of children to experience many levels of activity singly, in small groups and in large groups.

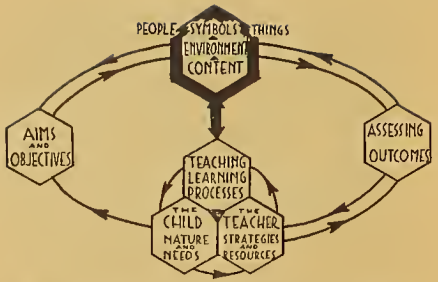
A varied and active curriculum requires a teacher with enthusiasm and knowledge in many fields. One teacher may not feel competent in all areas. This raises the practical question of collective planning of the curriculum by all staff members, the development of individual expertise in and responsibility for leadership in the different areas. It also raises the issue of sharing resources, sharing time, and of co-operative or team teaching involving two or more teachers. The sharing of teachers, materials, space and resources requires better communication, closer co-operation and greater consistency in expectation than ever before.



Even in shared space with team teaching the class unit must provide the child with a home base for social and planning purposes and relationship to one teacher who knows him and is responsible for him. Young children in particular need this security. There are several benefits in sharing. A class teacher can ensure integrated and flexible learning; a team must ensure that the same integration is achieved and improved on. There is a danger in rotary or specialist teaching of over-emphasizing specific content or an isolated skill. This would effectively neutralize the attempt to reinforce and expand learning through relating it to the real life needs of children. The overriding concern is to produce the best match between the purposes of the curriculum and the means of meeting them through the organization of space, time and other resources.

Selecting and Organizing Resources

The kinds of resources and materials needed by the three areas of curriculum are described in the respective guidelines. Common to all is the intent to provide children with a variety of first-hand experiences with materials so that they can experiment, shape, mould, master, and generate communication through speech, reading, writing and other forms.



CONTENT: THE TEACHING/LEARNING EXPERIENCES

Content is not merely subject matter or the facts or opinions contained in a text or course. It is much more complex. It includes the kinds of learning that a child must encounter, not only information but values, concepts, techniques, strategies, and skills.

The content is selected from the environment in several different ways:

1. because it is socially or personally useful and valuable, such as the basic competencies of communication and number;

2. because it reflects both

. children's needs, interests and styles of learning, and

. children's concepts and abilities;

3. because it is relevant to their levels of understanding of the world, and

4. draws upon the major forms of human knowledge.

CONTENT EXISTS ONLY TO GIVE RISE TO SIGNIFICANT LEARNING EXPERIENCES FOR THE CHILD.

WE ARE LOOKING AT

PEOPLE · THINGS · SYMBOLS

We Can See Them In Terms Of

SCIENCE		EMPIRIC
FINE ARTS		AESTHETIC
HISTORY	OR	ETHIC
RELIGION		SYNNOETIC
PERSONAL KNOWLEDGE		SYMBOLIC
MATHEMATICS		

OR WE CAN CALL THEM

- THE ARTS
- COMMUNICATION
- ENVIRONMENTAL STUDIES

The Selection Of CONTENT Is Affected By

Social Utility vs Personal Development

Kinds And Levels Of Learning

INFORMATION · CONCEPTS · TECHNIQUES · STRATEGIES · SKILLS · VALUES · ATTITUDES

Children's Needs And Styles Of Learning

PLAY · EXPLORATION · EXPERIMENTATION · IMITATION · REFLECTION · INTUITION · HABIT · FORMATION · ETC.

Children's Concepts And Abilities

QUALITIES · QUANTITIES · SPACE · TIME · CAUSE · EFFECT · RELATIONSHIPS · ETC.

WHICH LEADS TO

TEACHING LEARNING PROCESSES

KINDS AND LEVELS OF LEARNING

(A glossary of terms)

The word "skill" is over-used to describe a range of very different kinds of learning: social skills, reading skills, arithmetical skills and handwriting skills. All these are very different. More precise usages are suggested here.

The word "competence" is used as a general description for a smooth, effective performance or achievement. It may refer to knowledge, ability, or skill.

There are two aspects of learning: children acquire knowledge, concepts, or information and they carry out operations or use skills. We can distinguish between the content and the operation carried out on it, though these two things are very closely related in children's learning.

Learning:

- takes place at different levels of complexity, such as fact, concept, skill, or technique;

- involves routine and memorizing in different amounts;

- varies in the extent to which it calls on motor manipulation at one extreme and mental operations at the other.

In the field of content and knowledge, the levels suggested are:

1. Information or facts, for example, a number fact or a date in history. Even facts can vary in the extent to which they are particular or general, and obviously have to be put in some framework of understanding.

2. Concepts or organizing ideas. Concepts are based on the child's ability to discriminate, sort, classify and order his experiences and link what is similar in meaning, has the same function, or calls out the same response in a range of dissimilar situations. Concepts abstract and generalize from a variety of experiences: examples are shape, colour, size, number, classifications, such as animal or vehicle. Concepts are recorded and communicated by symbols, such as figures, pictures or words, but they are not the same as their labels. Teaching the word is not teaching the concept. It is unlikely that a child will understand or use an idea until he has acquired it through a variety of experiences.

We may distinguish between first-order concepts, which must be based on direct experiences, and second-order concepts which are more complex and assemble other concepts, information and operations. The second-order concepts still need to be tried and tested in experience.

Principles are even more general understandings of rules and generalizations, or very powerful general concepts such as: similarity, identity, pattern, sequence or the general rules and structures of mathematics or language or reading.

In the field of operations and actions, we can distinguish:

1. Skills, at differing levels of complexity and involving more or less motor manipulation. Skill is basically a sequence of actions or operations, in the best order and timing to fulfill a particular task or usually a variety of very similar tasks. A skill must have a goal and effective feedback on whether the goal or task has been achieved. Skills involve complex spatial patterns of body, hand or eye, in jumping, dancing, using a pencil or brush effectively.

Word skill is often used to cover competence, technique or operation. It seems worthwhile to distinguish between these.

2. An operation is a motor or mental action in which information, symbols, relationships or skills are assembled in predictable sequence to carry out a task. A good example is mathematical computation.

3. Technique is a purposeful and adept assembly of skills, selected and ordered to carry out a task. Much of what we call skills might better be called techniques - for example, painting a simple picture, reading a sentence and paragraph, riding a bicycle, carrying out a sequence of skilled movements to complete a task in physical education.

4. Strategy is a highly organized and general use of skills and operations. In developing a strategy, the individual selects information and concepts, simpler skills and operations, and puts these toegther in the best sequence in order to solve a problem or carry out a complicated operation which involves choice and decision. A strategy is a complex set of mental skills, but the individual may not be consciously aware of using strategies. It involves direction, planning, choice and putting the sequences of operation in the best order.

For example, when the young child learns the rules of his language, he gives evidence of using strategies of search and comparison. When a child looks for cues and regularities in reading and in spelling, he is using and evolving strategies. Reading itself is a powerful strategy for getting meaning from printed materials.

Deciding on what kinds of reading are appropriate, where to look for information, what questions to ask and the like are example of resource-using and problem-solving strategies. When the child organizes ifnormation into new patterns or discovers a new concept, he often applies strategies of learning.

Teachers refer to routines. These are operations or skills which are readily run off automatically or memorized.

An algorithm is a routine set of operations set out in specific, programmed steps each of which can be checked, so that the right sequence can be carried out and a correct answer obtained.

An example is adding a column of figures or carrying out addition. Once children understand what they are doing, there is much to be said for giving them very precise and clear-cut algorithms for carrying out routines.

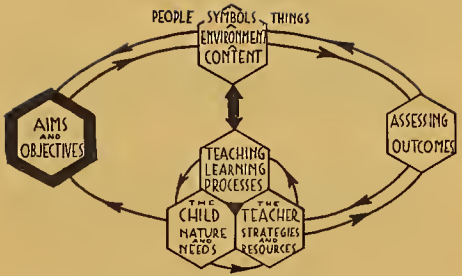
Formulas are verbal or symbolic statements of concepts, principles or operations which can be usefully memorized and used routinely once they are understood. An example is the formula for the area of a sequence which is a concise and economic form to remember a relationship once the child fully understands what it means.

A curriculum is concerned, not with giving the child information or isolated facts, but building up patterns of experience through the general organizing ideas and strategies, which condense and summarize experience and lead to understanding, intellectual power and economy.

The child must search for orderliness, find it for himself with help from the teacher in arranging the environment, in selecting experience and helping to bring out contrasts and similarities. The curriculum should make use of the child's desire and ability to look for pattern and meaning.

The curriculum is concerned with all these ways of learning, in addition to values, habits and attitudes.

All these ways of learning enter in differing degress into the various tasks which are encountered by the child. The child, as he learns, through play, exploration, acquiring habits, talking, reading - draws on all these forms of learning at one time or another, to develop competence and create a pattern of personal learning.



AIMS AND OBJECTIVES IN THE CURRICULUM

The Future and the Present

The child has already been born who may be a parent in the year 2000. It is a challenging task to educate children for conditions which are likely to be quite different from what we know. As society continues to change, it requires adaptable individuals who can cope with change and keep on learning.*

The child must be prepared, not just to be a member of society but to begin to understand it, to regard it critically so that he can contribute to necessary change and improvement.

1. The curriculum cannot confine itself to preparing the child for present tasks and vocations. It has to reconcile stability and change, personal security and adaptability.

2. It must provide opportunities for children to develop "in their own way", to be themselves, enjoy their childhood and get to know their own capacities so that they become secure but adventurous and imaginative adults.

* See the Worth Report - Alberta

SOME FACTORS WHICH AFFECT CURRICULUM

CHANGES	CONSEQUENCES
Rapid changes in the scientific and technological bases of society.	These produce changes in jobs and an increasing need for high-level skills and adaptable abilities.
A continuing acceleration in growth and availability of information.	Knowledge is rapidly and continuously out-dated. Textbooks, occupations and university degrees rapidly become obsolete.
An increasing need for powerful, inclusive ideas and theories to interpret the flow of information.	These must be understood by society and pupil as well as the expert.
The spread of information-storing and data-processing devices such as computers which are not yet adequately exploited.	A consequence is that storage of information and routine operations by the individual memory become less important but the learning of the new language and use of devices more important.
Re-training and continuing personal education in the widest sense will be spread out much further over the life cycle.	This requires a readiness to go on learning. Preparation for continuing to learn after formal schooling is completed.
A major concern of man is learning how to adapt to and take responsibility for his environment, which leads to re-evaluation of technology, its benefits and its threats to the environment.	The child should begin to understand the interrelationships of his personal, social, biological and physical environment.

SOME FACTORS WHICH AFFECT CURRICULUM

CHANGES	CONSEQUENCES
Social change and conflict between groups (colour, cultural, national) are likely to increase as the pressures on resources and the desire for equality increases.	The need for tolerance and understanding.
In contrast, the ever-increasing international exchange of ideas, practices, social and economic, present a challenge to the individual and society.	To communicate effectively and to live together without losing personal and group identity.
The future choice seems to be between moving into a post-industrial society with increasing mechanization, uniformity and lack of individual importance	Or creating a more human and diverse society using the schools and resources of the new industrial revolution.

Children must be alerted to the consequences of possible developments such as:

- the earth as a system with limited resources;
- the misuse of the environment and the consequent threat of energy and resource crises,
- zero-growth population;
- zero-growth economic systems;
- changes in family structures and child-rearing practices.

IMPLICATIONS FOR SCHOOLS

Children need to acquire general, transferable techniques of learning, of observing, classifying, using information to solve problems in preference to relying on routines or memorizing low-level information. The question is: how little should the child have to memorize, what selected general skills and rules should be made routine?

There is less emphasis on teaching specific facts and routines and much more on helping the child acquire habits of finding and using reference sources and resources.

The matters selected for learning, whether in mathematics, communications, science or human concerns, must be relevant and robust ideas. That is, they are the most important ideas and techniques in the disciplines, likely to stand the test of time and re-learning.

It is no longer enough to give the child answers. The child must be taught to question and how to question.

In communicating, the child must practice the oral, visual and graphic forms which are of increasing importance, and learn to use the supporting devices such as the hand-calculator, tape-recorder and camera, the "amplifying devices" for perception and application of skills.

The child for present and future profit and enjoyment must learn those activities which cannot be handled by machines, and establish his personal identity through a wide range of expressive activities.

Major aims of curriculum can now be stated in this context.

1. To help fit the individual for his changing society, enabling him to become a happy, adaptable and useful member of it.

2. To help the individual to develop his full and diverse personal potential.

3. The school must provide for the physical, social, emotional and ethical growth of the pupil, not only the intellectual. It must define where it has to make children more alike, in shared ideas, social norms, and minimum competencies, but be even more concerned with enabling children to become more diverse and individual.

4. As part of the general purpose, the child has to acquire the basic techniques and tools of knowledge - using information, reading, communicating, using symbols and numbers, so that he can learn

about and through
people
things and
symbols.

Nevertheless, the ways in which the child acquires the basic techniques are crucial in giving them personal purpose and meaning. He must acquire general concepts and skills so that he can

apply them in a personal way, not simply to satisfy immediate purposes in school but transfer them to new situations and use them as foundation for further learnings.

Some consequent concerns are:

The elementary school cannot prepare the child directly for any occupation, which may have changed by the time he enters work. It can assist the child to participate in and contribute to society. It can and should directly prepare him to anticipate increased leasure and have opportunity for personal growth.

A major concern is to help the child to become an increasingly mature person who will

- eventually be independent of his primary family group and his teachers,

- develop his personal autonomy, control and direct his impulses,

- be himself,

- choose and develop his own values,

- use his talents without infringing on the rights of others.

The child needs to be helped to lay the foundation of social and group skills, attitudes to work and personal responsibility.

The school has to resolve the possible tensions within it, of being on the one hand a conservative, stable influence in society and on the other, preparing children for a changing world.

The school must be a community in which the child learns relationships, can develop at his own pace, but be challenged to improve on and compete with his own standards. The requirements of the next stage of education, or of a possible later vocation, are borne in mind but must be secondary to personal development appropriate to the present.

The school has a cultural role, of transmitting beliefs, attitudes and knowledge of social institutions and social norms, as well as the tools and technology of knowledge.

It is expected to play a socializing role, of giving the child social group experiences and skills, inducing acceptable social attitudes and habits such as truthfulness, and good work habits, but without indoctrinating the child.

But besides this, if it is to provide education in the fullest sense, the school must help the child to become independent, constructively critical of his attitudes, values and assumptions. This is a difficult but crucial task in a pluralist society with many diverse ethnic,

language and cultural groups.

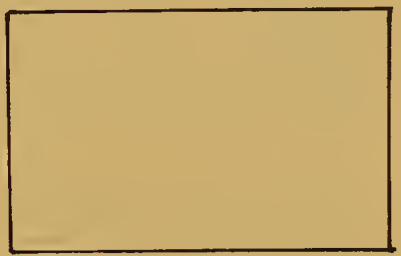
The child should be aware and tolerant of the differences in others, learning to live with these and accepting that each person has rights and responsibilities. He should be enabled to retain his own group and personal identity because he is given confidence, pride and security in it. He must be given assurance of his Canadian identity and at the same time encouraged to add his own contribution to make a richer pattern in the fabric of the Canadian nation.

The child needs to learn to make choices and decisions at his level of understanding. He should have direct personal experience of investigation and using resources. To meet his full needs, he needs opportunities for play and exploration as part of the cycle of learning. He needs creative work in many media and the opportunity to choose ways of personal expression.

The child needs help in developing discrimination in dealing with persuasion and propaganda. He needs help in developing personally informed responses to what he likes in art, design, reading, music, whether this is pop music or Bach, and an awareness of the quality of excellence.

The school must offer a variety of alternatives to meet diverse needs. Learning is only fully effective and is only retained when the individual sees its purpose. The school, therefore, cannot simply present the pupil with tasks and routines required to satisfy or please the teacher but must help the pupil to develop intrinsic motivation and interest in learning, to see that learning has general social purposes and demands but is personal and relevant to him. Learning must challenge, but also provide pleasure in doing well. Teacher and pupil must work out together agreed objectives and rules of conduct for group life.

Like any complex open system, the school and curriculum must provide purpose and control but also provide choices and be open to change.



Summary

General aims express the explicit beliefs and attitudes held by the community which is responsible for the selection and direction of curriculum. They often reflect unstated social, economic, political and ethical views about the nature of society, the place of the individual, the purposes of life, and what knowledge is worthwhile. Aims also take into account:

- the role of the school;
- the nature and needs of the child;
- the ways he learns;
- the ways teachers teach;
- the way in which knowledge of all kinds is acquired, systemized and used, and
- the purposes it serves.

These in turn have consequences for the selection and planning of learning situations. These last are statements of means and ends.

The school system, the school and the individual teacher each at their own level will need to develop from the general aims their own particular detailed objectives, which are the practical means to those ends and which take account of:

- the needs and abilities of children;
- their learning styles;
- what they have learned before;
- what learning is useful and what is personal - if there is a distinction;
- what is useful now and what contributes to later stages of learning;
- what is specific and what is likely to contribute to a more general aspect of learning;
- how the major areas of learning and the major levels of understanding, technique, skill, routines and values are represented;
- how increasingly, as the process approaches the pupil, he is involved in what he encounters.

HE MUST ENJOY BOTH THE DELIGHT AND THE DISCIPLINE OF LEARNING.

THE PLANNING OF OBJECTIVES

All educators concerned with curriculum and assessment need to define their objectives in as clear and specific terms as is possible. Guidelines, at the provincial and board level provide a framework of general aims. At the school and teacher level, these aims should give rise to more specific and detailed objectives which interpret the general aims. The objectives must be in terms of the pupil's learning experiences and what the teacher does to bring about desired outcomes.

Decisions on specific objectives must leave freedom for the individual teacher to select and adapt local situations, materials, and sequences which are likely to be the most profitable for his children. THE CONTENT OF LEARNING IS IMPORTANT ONLY INSOFAR AS IT GIVES RISE TO LEARNING EXPERIENCES. THE SAME OBJECTIVE CAN BE REACHED IN MANY WAYS.

To ask the teacher to plan specific objectives is NOT to ask him to prepare a detailed day-book. Day-books, like timetables, often do not have any practical or close relationship to what is actually taught. Nor should planning mean that a school or teacher should be required to use particular texts or prepared programs or packages. This kind of planning is best done by the staff or by a team of teachers.

It seems useful for teachers to ask themselves important questions such as these:

- what forms of readiness for learning are needed?

- what previous learning has the child had?

- are the proposed learning experiences or materials likely to give rise to the expected information, concepts, techniques, skills values or attitudes?

- how are the learning tasks to be selected and developed to match children's requirements and the materials available?

Defining and Assessing Specific Objectives

When deciding on specific objectives the teacher should consider:

- what can the child DO after learning which shows that he has changed as a result of learning?

- what kind or level of response is to be chosen as the criterion of achievement?

- what are the conditions under which learning takes place and which allow a fair assessment of the task or learning which has been carried out?

For example, in assessing one kind of reading comprehension, the teacher might use the "Cloze" procedure. A paragraph of appropriate level has every fifth word deleted and the child is asked to read and insert the missing words or words which have the same meaning. If the

child gets 35% or fewer of the missing words correct, the teacher can assume that the child has not mastered this task or that the content or difficulty of the passage is not appropriate. If the child gets 65% or more correct, the teacher may conclude that the task has been successfully performed and that the child can read this kind of material effectively.

This is obviously only one kind of assessment and the teacher would wish to make many other assessments of reading such as: use of books, interest, and attitudes to reading.

Flexible Planning

It is necessary for teachers to define their objectives clearly and to plan these in advance. If teachers are clear on where they are going, it will help them to assess what, when and how the child has learned. But it is equally important to keep in mind:

1. Learning and teaching are complex activities, and therefore must to some degree be unpredictable in detail. The reasons are that children learn in individual ways, children and teachers change their approaches to meet the immediate demands of the task. Only in strictly programmed instruction is there only one defined sequence of responses.

2. Objectives emerge and change constantly during the process of effective teaching. For these reasons planning of objectives must be kept flexible.

Performance or Behavioural Objectives

The following discussion of behavioural objectives is based on the assumption that teaching and learning constitute a flexible and adaptive system of relationships. There are some advantages and some disadvantages in accepting the claims of "the behavioural objective".

Behavioural objectives are based on the assumption that learning is shown by an overt change of behaviour and can occur in a specific measurable way. It is further assumed that objectives are defined beforehand, and that instruction and learning take their direction from specific objectives.

It is worth noting that:

1. Learning is not always shown by overt and direct change of behaviour.

2. The mastering of a specific behavioural objective is not an end in itself. It is a sign which shows that some important change has occured within the learner.

3. Behavioural objectives are highly specific, detailed and normally short term aspects of learning. These specific

behaviours must be assembled and organized in the best sequences. It is important that the teacher sees beyond the specific sequences and ensures that they are organized to best effect, and related to a real learning situation. The child must be able to organize the specific experiences into sequences or wholes which are meaningful for him.

4. Important techniques or concepts take time and experience to develop. They are not build up like bricks in a wall.

5. There is evidence that learning tasks can be effectively analysed into specific sub-skills and sub-concepts which can be isolated and mastered, but there is no clear evidence that a total form of learning will automatically follow from mastering the sub-units. It is still necessary for the learner to organize his learning and see how the units are related. (c.f. Gagné; The Conditions of Learning)

6. There are two links between objective and task:

(i) a logical relationship between the objectives set, and what the learning task intended to bring about.

(ii) a practical connection between the objective, the learning situation, and the outcome.

In many instances the writers of behavioural objectives do not give practical evidence to show that the specific learning tasks contribute directly to the intended learning.

7. In real learning situations, there are several different ways of arriving at the same objective, several ways of selecting material or the tasks to serve the learning experience. Individual children have their own preferred ways of learning, and these do not necessarily follow the prescribed sequence. This is true in an open situation when children and teachers develop their objectives and choose their own learning situations. It is difficult to relate a pre-planned and therefore rigid sequence of tasks with the flexible ways in which children learn.

8. Teachers have found it difficult to keep in mind and apply a detailed list of specific behavioural objectives.

9. Behavioural objectives have been defined in areas such as arithmetic or some aspect of development skills in which it is relatively easy to define sequences. It is less obviously applicable to the Arts or any learning situations requiring creative response or achievements which cannot be defined in terms of an external standard.

In the arts and creative writing, the assessment is of personal response, of creativity, use of materials, effectiveness and style of communication. To some extent, the outcome and the achievement are unpredictable in detail. In these areas of learning the teacher can describe performance, record the ways in which the child uses materials, learns and communicates. The teacher and the child must learn to judge the significance of personal experience.

10. Lists of specific behavioural objectives suggest an approach to learning in which the structure of the subject is dominant. This approach has an obvious kinship with the detailed analysis of content or learning experiences, leading to the finally graded sequences of learning, found in programmed instruction.

Task and Objective Analysis

In conclusion, the teacher should constantly review his objectives in the light of his experiences and attempt to make them as specific and precise as possible.

He should examine what is involved in the tasks, topics and materials that he uses with his children and ask how far they serve the purposes he has in mind.

Whoever is examining a particular area of learning: administrators, consultants, principals, teachers should ask themselves questions such as:

1. What are the main objectives?

2. Do these interpret and support major aims of guidelines or curriculum?

3. Are these objectives consistent with one another and do they suggest particular kinds and sequences of learning?

4. Which are the most important?

5. Will colleagues agree on this order of importance?

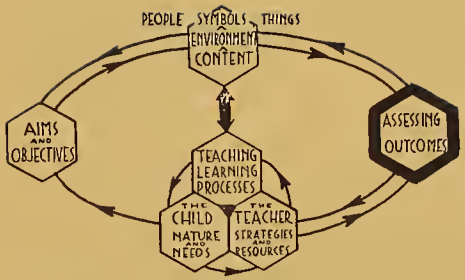
6. Which one would be kept if only one were possible?

7. What is required in the way of materials and learning situations?

8. Do colleagues agree that these objectives are clearly and specifically stated and related to these tasks and materials?

9. What kinds of teaching approaches or assumptions are involved in bringing about these objectives?

10. How practicable is it to carry out these objectives, given the resources and the teaching approaches available?



ASSESSING THE QUALITY AND EFFECTIVENESS OF LEARNING

The teacher must be concerned with assessing the progress and achievement of the children. He has to ask:

- why has this child learned or not learned?

- what has this child achieved?

- how has this child learned?

- what changes have taken place as a result of learning and teaching?

Answers to questions such as these will indicate in what directions, in what areas of learning, at what levels of understanding and performance the child or group of children has changed and failed to change.

Evaluation is concerned with how effectively the means of the curriculum serve the ends. It is concerned with assessment and judgment, not simply measurement. Measurements or levels of achievement, such as a test score, are only a means to an end and must still be interpreted. If assessment is identified with measurement then the teacher or school system can fall into the following errors:

- assessing only what appears easy to measure or can be compared to an external standard, for example, reading or arithmetical computation.
- going on to assume that what is complex and more difficult to judge or depends on a variety of personal responses by pupils such as the Arts, cannot be effectively assessed.

- ending by denying the validity of what cannot be measured or compared to a standard.

Evaluation is a process of communication which should take place in two directions. It helps the pupil inform himself of his progress and communicates this to teacher and parents. It enables the teacher to guide children's responses, matching and adjusting learning materials, media and teaching approaches to their abilities, readiness and previous learning. It is a means of communicating relevant judgments to persons outside the learning situations such as:

- parents;
- other teachers;
- the principal;
- the school system.

Evaluation may occur at different levels only some of which directly concern the teacher. It can originate at

- the provincial level;
- the school system level;
- the small group level;
- the level of the individual.

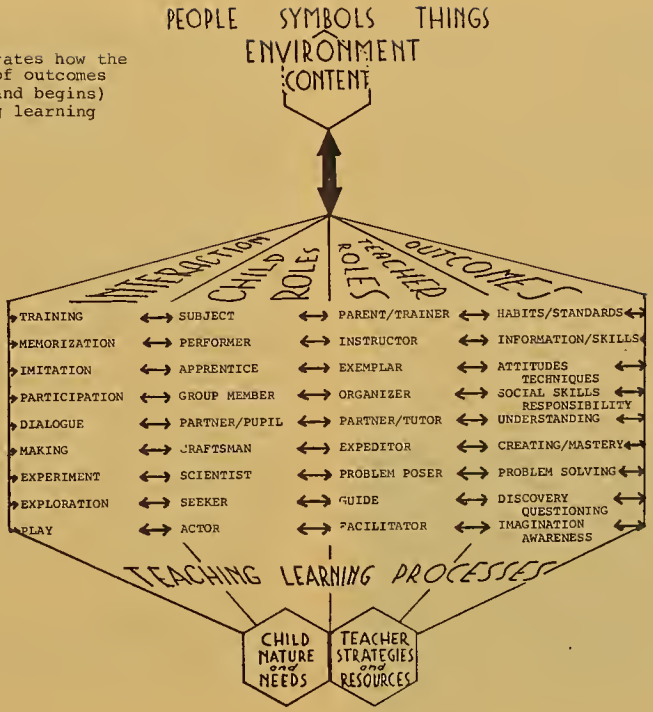
Evaluation is concerned with:

- the outcomes of learning for the pupil or group such as products or achievements, process, or ways of learning;
- the appropriateness and relevance of objectives;
- the effectiveness of learning situations: materials, programs, media, learning-teaching approaches;
- checking on the priorities in selecting content, kinds and levels of learning;
- costs and benefits of learning;
- examining the appropriateness of the assessment itself;
- identifying unforeseen or unintended consequences.

ASSESSMENT IS CONCERNED WITH IMPROVING OR CHANGING THE TEACHING-LEARNING SITUATION.

Diagram 6

This illustrates how the assessment of outcomes completes (and begins) the teaching learning process.


PEOPLE SYMBOLS THINGS
ENVIRONMENT
CONTENT
INTERACTION
CHILD ROLES
TEACHER ROLES
OUTCOMES
TRAINING ↔ SUBJECT ↔ PARENT/TRAINER ↔ HABITS/STANDARDS
MEMORIZATION ↔ PERFORMER ↔ INSTRUCTOR ↔ INFORMATION/SKILLS
IMITATION ↔ APPRENTICE ↔ EXEMPLAR ↔ ATTITUDES ↔ TECHNIQUES
PARTICIPATION ↔ GROUP MEMBER ↔ ORGANIZER ↔ SOCIAL SKILLS ↔ RESPONSIBILITY
DIALOGUE ↔ PARTNER/PUPIL ↔ PARTNER/TUTOR ↔ UNDERSTANDING ↔
MAKING ↔ CRAFTSMAN ↔ EXPEDITOR ↔ CREATING/MASTERY ↔
EXPERIMENT ↔ SCIENTIST ↔ PROBLEM POSER ↔ PROBLEM SOLVING ↔
EXPLORATION ↔ SEEKER ↔ GUIDE ↔ DISCOVERY ↔ QUESTIONING
PLAY ↔ ACTOR ↔ FACILITATOR ↔ IMAGINATION ↔ AWARENESS
TEACHING LEARNING PROCESSES
CHILD NATURE and NEEDS
TEACHER STRATEGIES and RESOURCES

System Evaluations

System-wide evaluation is useful because:

- the school system is responsible to the community for assessing the health and effectiveness of the system;
- the school system should monitor the carrying out of generally-agreed objectives;
- the school system has a responsibility for facilitating the development, improvement and implementation of curriculum guidelines and materials;
- the system needs to decide on the resources needed in schools and facilitate what is being done in the classroom.

System-level evaluation should not emphasize only extrinsic objectives, based on practical social needs, such as minimum levels of attainment in reading and mathematics but through assessment, reflect and facilitate the total range of the curriculum.

The purpose of evaluation is partly to set goals and standards, but, more importantly, to guide and improve individual learning. Success in learning is not simply measured achievement but whether the child is happy, responsive and eager to move on to the next learning experience.

First, Second and Third Person Evaluation

The first person in evaluation is the child himself. He must learn to assess his own capacities, his satisfactions, his degree of progress and what learning situations or tasks are appropriate.

From age 6 or earlier, a child can learn to assess himself in a variety of ways, such as;

- by comparing what he has already done;
- by using check lists;
- by using guide-sheets or charts which are based on a well-defined sequence of tasks;
- by checking off exercises, or a programmed text.

These are discussed in detail later. An essential part of the first person assessment is dialogue with and guidance by the teacher.

Second person evaluation also takes place in the learning situation, involving the child's peers, the teacher and others.

Peer assessment involves the response of his classmates to the child's achievements and personal growth. It can apply to a range of situations:

- from checking his work with someone else;

- appreciating his response in group situations;

- developing social skills;

- noting his contribution to an investigation, to drama or to expressive movement;
- praising or criticising a piece of work.

Children are often one another's most perceptive judges. Self and peer-group evaluation are the most frequent, realistic and valuable kinds of assessment, both in school and in later life. The teacher must ensure that the assessment is fair and constructive, and takes place in situations which encourage honest dialogue between children and between children and adults.

Second person evaluation carried out by the teacher is common to all classrooms. This should be based on systematic observation and accurate records as well as on assessments of children's products and of their response to tests, exercises or assignments. Parents can contribute to second person evaluation only when they participate in the learning situation.

The assessments used by teachers and children should:

- compare learning with the objectives co-operatively set by teacher and child;

- enable the teacher to match learning situations to children's capacities and needs;

- enable the teacher to summarize and judge what a program or learning materials have contributed;

- give a profile of learning for the pupil which may vary in different areas such as mathematics or language;
- permit diagnostic work;

- suggest change of materials;

- operate at different levels of concepts, skills, attitudes;

- if necessary, compare how different children in the group have responded;

- enable the teacher to assess the emotional and social development of children toward independence, responsibility and the like.

Third person evaluation occurs at a level outside the immediate learning situation. It is normally concerned with communicating with people such as parents, other teachers, principals and other officials at some level of the school system, who have an interest in the child's achievements but are not directly involved in the teaching/learning situation. It is often assumed that third person evaluation must be a formal, recorded assessment. Outcomes can be communicated through discussion with parents and colleagues, by reviewing and displaying work done by pupils, as well as by record cards. Pupils should take part in some aspects of this assessment. They can show or demonstrate samples of work to parents and others, giving and getting points of view.

When third person evaluation is called for by the school system or any other agency outside the school, it should be justified to the school and teacher by defining clearly:

- why the evaluation is needed;

- what categories of assessment and range of objectives are covered;

- what use will be made of the information;

- how it will be communicated and to whom;

- what norms or standards or masteries, if any, are appropriate;

- how the assessment relates to the curriculum objectives set for the system and more particularly for the school and the teacher;

- what decisions are likely to benefit or improve the learner.

Throughout a system, making evaluations should be a co-operative enterprise, involving joint planning, feed-back and communication. The teacher and the school can then reconcile the needs of particular children with the general objectives of the wider community. Evaluation and objective-setting are not so likely to be seen as imposed from outside the teaching situation, as can occur when system-wide achievement tests are used. The objectives set by the teacher and the assessment he makes of his children will be realistic and in harmony with those of the school system.

Dimensions of Evaluation

Evaluation may:

- be formative or summative;
- focus on program or child;
- measure product or process;
- be concerned with extrinsic or intrinsic forms.

1. Formative and Summative Evaluations

Most of the teacher's assessments will be formative or short term, aimed at observing and intervening as the child learns. Its purpose is to check whether learning is effective and to change, as necessary, the pace, the materials, the learning approach or possibly to revise the objectives. The teacher assesses the match between child and learning situation, either informally or by check lists, questions and tests.

Summative or long-term evaluation is concerned with a final accounting, at the end of a course or period of time, of

- the progress of children;
- the effectiveness of the program in all its aspects;
- the costs and benefits.

The two approaches are complementary, not opposed. If on-going assessment and recording are effective, the need for a summative evaluation is less, and it can be based on the cumulative information already gathered over the weeks or months.

When an experimental program is being tried out under real conditions, it makes sense to alter the program or conditions under which it is used if the teacher is sure these changes are for the benefit of the children or matches the program to their needs more closely. He should keep assessing rather than persist in carrying out a program unchanged just to record the outcome for a summative evaluation. It is essential that the teacher should record precisely the reasons for changing objectives, set out the revised objectives and the alterations made in the program. Obviously this flexible approach is not possible if the program is being evaluated or developed under strictly-controlled research conditions.

2. Program and Child

A teacher assesses the effectiveness of a program or how effectively the children have learned. Obviously, the effectiveness of learning depends on the program. In turn, the effectiveness of a program or learning materials is shown by the fact that children are helped to learn effectively. The two aspects, program and pupil are obviously complementary and should be appropriately matched.

The teacher's selection and arrangement of learning situations and teaching approach influence both the presentation of program and the response of his children. It is notoriously difficult to make clear-cut separate assessment of program and teaching methods or style. Both the teacher's own assessment and an assessment of the situation from the outside must accept the fact that assessment has this complex quality.

3. Product and Process

Products are observed or tested achievements such as ability to read a sentence of defined difficulty, or use a ruler or recall a number fact. This is the WHAT of learning.

Process is less easy to define, but in many ways more important. The teacher should assess HOW, WHY and WHEN children learn. Process assessment is concerned with the way in which teacher and children set and change their goals during learning, the ways in which the child defines his own learning and objectives. Important learnings such as using information effectively, finding and recognizing problems, working out strategies for solving problems or an experiment, using resources effectively or creatively or developing attitudes of persistence, or setting and meeting personal standards in the work are part of the process of learning. It is in the nature of process learning to be less predictable, more personal and responsive to on-going situations.

Assessment should take account of all these objectives, process as well as product.

4. Extrinsic and Intrinsic Approaches to Evaluation

Extrinsic evaluation concerns itself with defined objectives, the changes that take place as a result of learning-teaching, pupils' achievements or the effectiveness of a program.

Intrinsic evaluation is equally important, at school and classroom level. It asks

- what learning experiences and materials have been presented to the child?

- how appropriate are these to children's needs, previous learning and ways of learning?

- what is the content and internal consistency of a program?

- how consistent is a program or learning situation with the declared objectives?

- what realtionship is there between objectives and the learning situations, and the teaching approach or beliefs of the teacher?

- what is the balance between the different kinds of learning and the different levels of learning and the different levels of learning, fact, concept, skill and attitude?

- how clearly are objectives stated?

- which objectives are felt to be most important?

- whether it is practicable to carry out the program with the available resources and teaching approaches?

An intrinsic evaluation is concerned with whether the teacher has appropriate and sufficient materials to carry out a program. It is concerned with the appropriateness of materials to meet children's needs, for example, appropriate reading level of materials or adequate presentation and reinforcement of the important ideas or skills. It is concerned with checking on whether a teacher who expresses belief in the value and practicability of a particular approach, for example, the discovery approach in mathematics or science, can back this up with appropriate materials and learning situations, or whether there is a conflict between objective and practice, as when a program intended to be used with a particular teaching approach is used in another way. Methods of teaching reading, for example, can quite often show inconsistencies between the declared objectives, the learning materials or situations used, and the assumptions about the way the child should learn. Mathematics which requires some amount of experiment, concrete experience and discussion may be presented as a textbook sequence.

Some Basic Issues in Evaluation

1. Obviously, the objectives set and the learning situations to which they are linked must have a sensible reationship with the form of assessment used. It makes little sense, for example, to give a child considerable experience of practical mathematics but assess him only on a written test of computation. Nevertheless, children and programs have been assessed in this inappropriate way, and much research comparing experimental programs or methods has been invalidated by use of inappropriate forms of assessment.

2. Children learn in complex ways. They rarely learn only one thing at a time. In learning to measure, for example, they may recall number facts, use a unit to a certain degree of precision, carry out the operation of measuring with a given degree of accuracy and be aware of how far the measuring situation can be applied more widely. Thus, information, operations, attitudes and values are involved. Assessment should attempt to reflect or analyse this complexity of learning, if it is to be faithful to reality. It must deal with learning tasks, with understanding, with values and attitudes as well as facts and skills. It is obvious, too, that children can learn things that are negative or unintended.

It is possible for a child who is dealing arithmetical computation too early or too routinely to learn, not only facility in number facts, but also the hidden objective, to get the right answers quickly without asking questions. In fact, some kinds of routine learning may restrict later complex learning, in reading or mathematics, by including certain sets and attitudes. The teacher must be aware of the totality of objectives and the way in which they are interrelated in the tasks as perceived by the child. Teachers must recognize that their organization can encourage or discourage the integration of learning.

3. Objectives have often in the past been defined by the test or examination used for assessment. The score on a standardized test or content of the text or exercise has been taken as the objective. Teachers can become confused between classroom routine, the tasks or topics they use and the objectives - the ideas, skills and values - which these tasks should represent. There is a danger of teaching for tests or the content of a course, without asking what purpose these serve.
Emphasis on language, reading and number in standardized achievement tests has led to stress in the curriculum on these measurable aspects of skill, routine response and recall, rather than problem solving or the flexible use of resources and references, which is less adequately reflected in group tests.

4. Assessment should obviously be related to the abilities of the children. The more able child will usually make faster or better progress in learning than the less able, and the teacher has to be sure he is not confusing the effects of his teaching with the effects of ability or development. It is, in fact, quite different in the complex conditions of the classroom ever to be sure that a given result is due to a particular learning situation or teaching approach. To compare "like with like" and try to ensure that the change in the child is due to his learning experience raises the issue of "pre-testing" for readiness and previous level of learning and "post-testing" to establish change which is associated with the behavioural objective movement. If the teacher is continually observing and recording his children, he will in effect be assessing where they are, what action to take and what the outcomes, so that he is in effect constantly monitoring and "pre-post" assessing children.

5. Teacher and system must from time to time attempt to assess the costs and benefits of what is learned, to improve the use of time and resources. The costs and benefits do not necessarily present money directly, but they do refer to values, preferences and priorities. If a program does not work well, or is wasteful of time or resources, another may take preference over it.

A SYSTEMS APPROACH TO ASSESSMENT

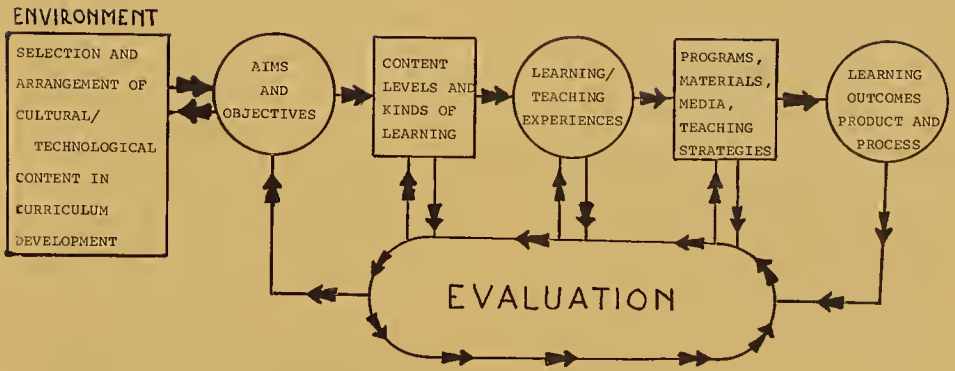

ENVIRONMENT
SELECTION AND ARRANGEMENT OF CULTURAL/ TECHNOLOGICAL CONTENT IN CURRICULUM DEVELOPMENT
AIMS AND OBJECTIVES
CONTENT LEVELS AND KINDS OF LEARNING
LEARNING/ TEACHING EXPERIENCES
PROGRAMS, MATERIALS, MEDIA, TEACHING STRATEGIES
LEARNING OUTCOMES PRODUCT AND PROCESS
EVALUATION

Diagram 7

This indicates that assessment should take place at every level in the curriculum. The instruments of evaluation should also be continuously assessed.

6. Those who are involved in setting the objectives should participate in the process of evaluation; the pupils themselves, who are the most important, parents, teachers or teaching teams, and the school system and wide educational community. The various viewpoints, needs and demands would then have a better chance of being reconciled, communicated to one another and balanced.

Instruments of Assessment

Teachers may use a variety of aids in defining and assessing achievements:

- they may use observation and recording of children's work;

- they may use attainment on programmed material or texts or workbooks, which the child himself can record and report;

- they may use check lists of achievements or skills;

- they may use various forms of objective tests.

The first concern of the teacher is to observe the children and to record observations. This record can describe how the child behaves in relation to what tasks and what objectives are being met. The record should be brief, but regular and as frequent as is feasible. It is valuable to review and summarize at least once a week.

Achievement Tests

Normed tests and mastery tests

Achievement tests, constructed by an outside source, by the board or by the school itself have a contribution, but the teacher should be aware of the limitations.

Standardized achievement tests

The usual achievement test is based on norms. These can be reading ages, standard scores, grade scores and the like. These implicitly compare one child with another within a particular group and rank pupils in order of merit. They do not state to what extent they have mastered a particular content or learning experience. They do not give a direct statement of what tasks a child can carry out. Since they spread children over a wide range of scores, so that normally some 50 per cent of children will get a score which is fifty per cent of the possible score, a significant proportion of children fail to master many of the tasks set by the test.

Unless a test is constructed for a particular school system, or school, it cannot reflect the curriculum directly. Tests are often so constructed, that they (i) discriminate among children, (ii) select items which are passed between 80 and 20 per cent of children, and (iii) concentrate on general competencies such as vocabulary, reading and arithmetic, that is, general abilities and achievements, and not the secific content and learning situations of a particular curriculum.

Standardized tests give norms but not standards. If the teacher, school or system wishes to compare groups of children, or schools, or individuals, such a test is useful. The information on an individual pupil states where he stands in comparison with the group in terms of general achievements or abilities measured by the test. It does not tell the teacher:

- what particular learnings the pupil has achieved;

- how he got that particular score;

- how his achievement relates to the tasks of a specific curriculum;

- what he should learn next.

This information can be obtained, but it is not directly given.

The test norm, like the school grade and the grade score relies on inbuilt comparison and competition.

The Mastery Test

The kind of test which is most likely to be useful for the teacher is the mastery test. The mastery test is a measure of a specific learning or sequence of learning. There is not need to compare one child with another. Success on the task itself is the criterion. If a child has mastered the test it tells the teacher that:

1. He should be able to cope with an equivalent task or learning situation. For example, if he can read a piece of prose successfully at a certain level, he should be able to read a variety of material of equal complexity.

2. The child's learning can be related to a developmental sequence or a curriculum sequence, showing what level he has reached. As a result, the teacher can assess what previous learnings he has mastered, and what tasks are now appropriate. The teacher can use the child's success on a particular task to estimate his readiness for a new task or predict how likely he is to succeed in the next learning situation. For example, if the child can recognize and add successive groups of the same size, he may be ready for the idea of multiplication.

Mastery tests should reflect tasks or learning situations of a particular curriculum. They are a direct measure of what is happening, not an indirect one. They are measurements of performance objectives.

Since mastery tests simply assess how well children have learned, they are not concerned with describing failure or making comparisons. If they are appropriate, they should be passed by a very high proportion of children. The percentage "passed" depends on the system, the school or the teacher, but one concludes that the test would be "passed" by approximately 90 per cent of children of the appropriate age and ability, if they have mastered the learning.

If the school or the school system wishes to set standards of performance, these are determined from assessments of mastery. Standards are achievements which can be reached by a majority of children of a given age, ability and experience.

If the school system or school wishes tests of achievement (which include not only information but concepts, techniques, and skills), they should define the desirable objectives of learning, then develop mastery tests. These should include assessments of the less measurable forms of learning. It should always be asked what purpose, if any, is served by comparing groups of children in achievement. To give a range of grades or scores means that some or many children did not succeeed in learning and this in turn has critical implications for the effectiveness of teaching, the effectiveness of learning and the appropriateness of aims and materials. A test of success is that practically all children master an achievement. If the school or teacher is interested in the differences between individuals or the spread of achievement, this can be given by the level and variety of the mastery tests.

No test from an outside source will ever exactly fit the needs of a school system or a school. Most tests presently available are standardized tests based on norms. They rely on comparisons and do not give direct measurements of the curriculum.

Record Keeping

In education which gives scope for personal and individual learning, one of the major areas in need of detailed attention is assessment and record keeping. These records must be appropriate to the needs of children and of teachers. They must serve as an effective means of communication between child and teacher, teacher and colleague, between teacher and parent and between schools. Then evaluation takes its place in the much large and more important question of the planning and communication of learning.

Good record keeping is the raw material of assessment. Records will need to take several forms, not simply one record card for each child. Much of record keeping is based on observation of children. Teachers need to note how children respond to different materials and learning situations:

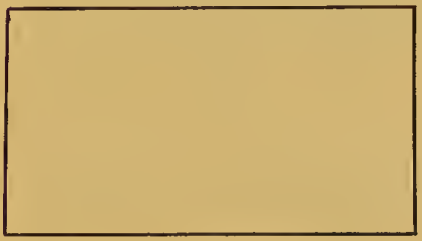
- to check the appropriateness of tasks;

- to check the content and difficulty of reading material and other material;

- to note how use of space, resources and groups affects learning.

The teacher needs to listen to children's discussions and comments, and ask them to give further explanations, in order to check directly on their ways of perceiving what the task is and how they undertake it.

Records allow the teacher to accumulate and organize a great deal of detailed knowledge.



Records need to be kept so that

1. The teacher is aware of the influence of home background, early language and learning experiences.

2. The different tasks and materials being worked on by different children or groups children or the variety of assignments are carried out within a flexible program.

3. To communicate information to teachers in the next stage of the child's learning, or colleagues in a teaching team.

4. To give a meaningful picture of what the child has learned, if he moves from one stage of learning such as the primary to the junior or moves between schools.

Detailed, meaningful observation leads to good records. The better the teacher understands the child, the better he can help him. Records help teachers to think about individuals, look more closely and notice what they might otherwise have overlooked.

They give the teacher a sense of confidence that a child is making progress.

They help provide a colleague in a teaching team or a principal with knowledge of individual children and this can be used in discussing the child's progress with parents, or in planning the curriculum, or individual programs for children.

Effective use of records can help principals to know their own staff, the ways they look at children and their approaches to teaching. This can help in planning distribution of classes and children to best effect, and contribute to in-service training within the school.

The record should refer to the child's variety of abilities and achievements, not just his general ability. It is useful to have a note on motor, perceptual and language skills for young children. In addition to noting the child's abilities and difficulties, the record should specify how the child dealt with his tasks and what was done to help him to overcome any difficulties. This is often the most important aspect of the record for the next teacher.

Achievements need to be explicitly defined. For example, not simply "counting to ten" but noting whether this means knowing the number name, identifying the group, writing the symbol, knowing the base. The kind of detailed record kept daily or weekly in the classroom will often define actual tasks or learning situations or assignments, but make no comment relating these tasks to more general meanings such as the concept or the skill involved.

The records used by teachers should include:

- notes on observed behaviour in a variety of situations including the attitudes taken;

- inventory of developmental stages and concepts and skills to be learned;

- coments on a child's progress through a sequence in mathematics or reading. These would note his use of phonic clues, grammatical clues, vocabulary, and other indicators of growth;

- reference to programmed material which gives its own mastery levels;

- samples of children's work from a variety of learning situations.

Different teachers will have different views on what things to look for. A variety of observations is useful. It is impossible to observe and record everything that is happening for every child in all areas of learning at the same time. Some teachers have found it valuable to concentrate on different aspects of learning at different times, sometimes observing writing, observing responses to reading, observing children's social behaviour. Teachers may distribute their attention so that they concentrate on a particular group of individuals at one time and another group later, and devote more attention to both the slower and the brighter children in order to be aware of those who may have difficulties and need more attention and those who need to have an enriched and more challenging program.

A long-term statement of intent is useful in helping the teacher to define major aims and approaches to be tried, the resources and materials which will be needed. This kind of statement should refer to the opportunities which it is hoped will be given to children, with comments on the organization, use of space and materials in relation to the objectives set.

Short-term plans help to compare what the children have achieved with what was planned. They can provide a useful 'feed-back' about needed modifications on techniques, materials, approaches and organization.

The child should be helped to make his own records. These vary considerably but help the child to assess his own standards. Children can note tasks or assignments on individual charts or keep their own record books to be checked by the teacher. These should include space for each child to comment on his progress and how he enjoyed the work. If children are given guide sheets which fix some assignments and allow choice for others, these can be used as record sheets. Again, space should be provided for comments by both the child and the teacher.

Children can begin keeping their records in quite specific and concrete forms from the age of 6. Older children in the Junior Division can be helped to attempt self-evaluation. They can record weaknesses or faults they see in their work,

the difficulties they encounter, the suggested remedies, how they might be corrected in individual class work.

Tape recorders can be used for on-the-spot recording of comments and difficulties either by the teacher, or by individual children. These sound recordings can be used for later study by the teacher. They are particularly useful for measuring progress at a future point in time by the children themselves.

Records contribute to every aspect of assessment that has been discussed. They help the teacher to trace children's achievement over a period of time. A comparison with objectives set can lead to discussion of how far the work has fulfilled the aims for the whole class, for groups or for individuals.

A review of records can assist teachers to identify what they have learned over a period of time. This is particularly useful if records are used in a professional way to help teachers either individually, within a team or within a school.

Records help meet the problems of management and use of resources or space. It is essential that when changes of curriculum, organization or method take place that teachers record:

- the positive effects of change as well as the difficulties;
- the impact on the more able as well as the slow learner;
- the effective use of materials and resources.

Finally, the individual teacher, the school and the school system need to devote attention to the kinds of records they can keep. Records should have clearly defined purposes both for the one who makes the record and the one who uses it. They must be capable of being recorded easily, found quickly and used in a practical way.

Communicating With Parents

Effective communication with parents is essential. Records kept for discussion with parents, or for communication to parents, need careful construction. They should not use stereotyped language but describe progress and the child's characteristics in simple terms. They should refer to the child's total development as well as his mastery of particular kinds of learning and areas of learning not to grade levels or scores which imply comparison with the group. They should involve parents in an active dialogue through comments on the children's progress and discussion, and preferably through face-to-face discussion with the teacher either in the home or in the school.

*School Grades and Grading

Although schools have a variety of organizational patterns according to their needs, many still use the grade as a basic structure. As a form of class organization the grade defines a kind of average achievement expected for an age group. The underlying assumption is that the class will cover a certain amount of content in a year. There will normally be a wide range of ability within a grade and significant overlap between grades in terms of ability and achievement. Description of a child's progress in terms of grade level says little about the individual.

Descriptions of the detailed tasks he has accomplished and the learning experience he has had to date are far more valid and useful.

Grade marks or levels essentially compare children with one another and with some arbitrary ill-defined standard based on the average performance of children within or possibly outside school system. These marks do not indicate the children's success on the particular tasks and kinds of learning that they have undertaken and have little diagnostic or predictive value. Grade average is a crude measure of general educational ability or achievement.

(c.f. Goodlad and Anderson.)

Summary

Assessment and record keeping which are appropriate to the needs of children and of teachers and adequately reflect objectives set for the kinds of learning which have been experienced, should serve as an effective means of communication between all those concerned with schools. Evaluation then takes its place as part of the larger and more important concern of planning for effective learning.

PROVISION FOR EXCEPTIONAL STUDENTS

The ideas discussed in the sections on child development and the organization of teaching strategies apply equally to exceptional children.

Exceptional children can be defined as "those children who have physical, intellectual, communicative, social or emotional deviations to such a degree that curriculum modifications and/or special services must be provided for them in schools."

Briefly, provision for exceptional students consists of developing programs, adapting environments and providing instructional materials in order to meet their varying needs. Examples include an appropriate reading scheme, or a hearing aid, or a low-power magnifier which may enable the child to adjust for any sensory deficiency and to receive as near as possible a normal pattern of perceptions.

There is no purpose in simply using labels, but it is suggested that the following four broad areas of exceptionality be used for the development of programs and services:

Behavioral Exceptionality - includes emotional disturbance and social maladjustment.

Communication Exceptionality - including hearing and speech difficulties, perception and visual dysfunction, learning disabilities.

Intellectual Exceptionality - the mentally handicapped and gifted.

Physical Exceptionality - including blindness and limited vision, cerebral palsy and other physical handicaps.

A significant proportion of exceptional children have multi-handicaps, often at birth. Others begin with one disability but incur others. For example, the deaf child may be retarded in learning to speak and may experience difficulty in reading. The cerebral palsied child not only has difficulties in moving and manipulating and so in drawing and writing, but also in perception of space and pattern. The teacher should be aware that even a child with a mild disability may develop secondary handicaps.

It is often useful to look at exceptional children in relation to what is known of normal development to see where they deviate. Their deficits or deviations can be interpreted in relation to this framework, so that special provision can be made in materials, learning supports, changes in method or media, or fundamental adaptations of teaching techniques.

In some cases behavioral problems can be ameliorated through providing the child with many success experiences. In the case of more severe problems, consultative assistance should be sought.

Knowledge of how children acquire and use representations and symbols and how

they communicate - gesture, movement, play, picture and language - are essential in interpreting the difficulties of a child with communication exceptionality, and choosing a flexible and varied means of communicating and teaching.

Intellectually handicapped children need, not a slower and more diluted form of the normal programs, but a curriculum which is concrete and practical, employing multi-sensory learning techniques. He may need, for example, more opportunity for creative activities which allow him to experience and communicate without the burden of language and reading. He may also need more help, guidance and structure in dealing reading or number. Only flexible and open-minded experiment will provide the evidence needed.

Children with physical exceptionalities need opportunities to explore their environment to build up their perceptual world. Examples include opportunities for movement and play even from a wheelchair, use of tape-recorders, manipulative materials are all aids which a teacher can use.

A major goal in the organization of Special Education is the integration of all exceptional students who might benefit from placements with regular programs.

If exceptional children are to be integrated into a regular classroom environment, this environment must also adapt to meet their needs in terms of staff, curriculum, method, materials and organization.

It is essential that teachers learn to make full use of all of the supportive services available to the school. A summary of the types of programs and services in this regard are as follows:

Special school

Advantages

Total program geared to needs of specific group(s).

Centralized professional skills and specialized equipment.

Research possibilities.

Planned architectural modifications and provisions.

Specialized non-academic curricular areas.

Possible community centre for continued training and guidance.

Residential or non-residential.

Possible but not inevitable disadvantages

Few opportunities to mingle with peer groups in general population (segregation and isolation).

Stigma often attached to facilities for a typical students.

Possible but not inevitable misuses

Substandard educational programs due to negative expectations and the predominance of medical treatment procedures.

Excessive sheltering which inhibits habilitation.

Lack of specific provisions for interaction with chronological peer groups in general population.

Comments

May be necessary for more severely or multihandicapped students at least for a time.

Self-contained special class

Advantages

Curriculum geared to specific group.

Special equipment and classroom modifications.

Research possibilities.

Relatively homogeneous groups for instruction.

Possible but not inevitable disadvantages

Few students can be served by skilled personnel and special equipment.

Disadvantages of a special school continue to be possible.

Possible but not inevitable misuses

A dead-end for problem students.

Heterogeneous groups too wide for teacher's skills.

All the deficits of a special school.

Comments

May be necessary for some students at least temporarily.

Use a developmental curriculum specifically for needs of students — not remedial adaptation of regular programs.

Modified special class

(partially integrated with regular programs for chronological peer groups)

Advantages

Planned interaction with peer groups.

Decreased segregation.

Curriculum and scheduling geared to individual strengths and weaknesses.

Often better self-concept development than in segregated settings.

Teachers frequently give higher ratings of school adjustment than in other settings.

More realistic vocational aspirations and more after-school jobs are commonly found than in other settings.

May be adapted to open-concept, ungraded situations.

Possible disadvantages

Relatively few students served by skilled personnel and special equipment.

Inappropriate planning may increase stigma and resentment.

Unwillingness of some teachers to accept atypical students — even on a part-time basis — and destructive psychological isolation or segregation.

Possible but not inevitable misuses

Inappropriate goals or programs (unwise choice of teachers, age-group, and/or activity for integrated portions of program).

Use of integrated activities to replace rather than to supplement the special education programs.

Comments

A step in educating an entire staff to accept handicapped students.

May be necessary for some students on a long-time basis.

Supply concurrent in-service opportunities to discuss concrete problems as they arise.

Modified regular class

(plus support of itinerant special resource teacher, supervisors, consultants, etc.)

Advantages

Frequent association with chronological peer groups.

Skilled, highly trained personnel may serve many more students.

Facilitated by recent trends toward flexible scheduling, continuous progress, auto-instructional materials, etc.

Every teacher involved in education of all students including those who are handicapped; in-service education benefits all students eventually.

Behavioural patterns may be set by average in chronological peer groups.

Less need to label students.

Possible disadvantages

Unwillingness of some teachers to accept atypical students and to work as member of multidisciplinary team for planning individualized programs.

Stigma and rejection may be active in absence of appropriate teacher attitudes and preparation.

Provision of time for in-service education.

Obtaining adequate personnel and facilities for smaller regular classes and for supportive services.

Possible but not inevitable misuses

Over-dependence of teachers upon ancillary personnel.

Lack of continuous, overall planning and adequate communications.

Failure to schedule adequate time for team planning.

Overburdening of regular class teachers.

Comments

Adequate preparation, in-service teacher education and supportive supervision are necessary.

Each student must be able to cope with the regular class situation.

Regular class

Advantages

Administrative ease and (false) economy if not the final stage or goal of rehabilitation programs, classes and services.

The goal of all special education programs and services.

Disadvantages

Without assistance, exceptional students usually are rejected and psychologically isolated as undesirable by both teachers and fellow students.

Programs meet the needs of the majority and ignore or actively condemn the educationally handicapped.

Possible but not inevitable misuses

Failure to recognize and to meet the needs of atypical children.

Comments

A retrogressive approach, unless it is achieved through a special program, class, or service, which has become no longer necessary.

Home instruction

Advantages

A basic education for severely handicapped students who cannot attend school for physical or behavioural reasons.

Assists students in maintaining academic status during prolonged absence due to illness, accident, or personal crisis.

A supplement to part-time school attendance during treatment or during program of gradual introduction to full-time attendance.

Disadvantages

Few opportunities for association with chronological peer groups.

Segregation; isolation.

Skilled teacher may serve very few students.

Possible but not inevitable misuses

To avoid exclusion of problem students — solving a classroom problem without actually ameliorating the child's problem.

Comments

A necessary, expensive program to be used only when actually necessary.

May be supplemented by home-to-school telephone systems, teleclasses, special frequency radio, and educational television.

BIBLIOGRAPHY

*The Report of the Provincial Committee on Aims and Objectives of Education in the Schools of Ontario. Toronto: Ministry of Education, 1968.

The Plowden Report: Children and Their Primary Schools. London: Her Majesty's Stationery Office, 1967.

The Gittens Report: Primary Education in Wales. London: Her Majesty's Stationery Office, 1968.

American Educational Research Council Series on Curriculum Evaluation No.3: Instructional Objectives. Chicago: Rand, McNally & Company, 1969.

*Anglo-American Primary School Project. British Primary Schools Today. Toronto: Macmillan of Canada, 1971.

Bloom, Benjamin S., Hastings, J. Thomas, Madaus, George F. Handbook on Formative and Summative Evaluation. New York: McGraw, Hill Book Co., 1971.

*Beard, R.M. An Outline of Piaget's Developmental Psychology. New York: Basic Books Inc., 1969.

*Bigge, Morris L. Learning Theories for Teachers. New York: Harper & Row, 1964.

*Biggs, E., MacLean, J.R. Freedom to Learn. Toronto: Addison-Wesley (Canada) Ltd., 1969.

Britton, James N. Language and Learning. London: Allen Lane, The Penguin Press, 1970.

*Bruner, Jerome Seymour. The Relevance of Education. 1st Ed. New York: Norton, 1971.

*Churchill, Eileen M. Counting and Measuring: An Approach to Number Education in the Infant School. London: Routledge & K. Paul, 1961.

Flavell, John H. The Development Psychology of Jean Piaget. Princeton, N.J. Van Nostrand, 1963.

R. Bott et al. Fundamentals in the First School. Chairman, M. Brearley, Frobel Institute College of Education. Oxford: Blackwell, 1969.

Lovell, Kenneth. The Growth of Basic Mathematical and Scientific Concepts in Children. London: University of London Press, 1964.

*Mussen, Paul Henry, Conger, John Janeway and Kagan, Jerome. Child Development and Personality, 3rd Ed. New York: Harper & Rowe, 1969.

Popham, W. James and Baker, Eva. L. Establishing Instructional Goals. Englewood Cliffs, N.J: Prentice-Hall Inc. 1970.

Tyler, Ralph W. Basic Principles of Curriculum and Instruction. Chicago: The University of Chicago, 1950.

Yardley, Alice. Young Children Learning Series:

1. Discovering the Physical World
2. Exploration and Language
3. Reaching Out
4. Senses and Sensitivity

London: Evans Bros., 1970.

Millar, Susanna. Psychology of Play. Harmondsworth, Penguin, 1971.

Chomsky, Noam. Syntactic Structures. New York: Humanities Press, 1957.

Gagné, Robert M. Conditions of Learning. New York: Holt, Rinehart and Winston, 1965.

Beck, C.M. Ed. Moral Education: Interdisciplinary Approaches. Toronto: University of Toronto Press, 1971.

* These are the most relevant to this report and should receive priority in terms of reading.

16 MM FILMS

1. Children Thinking Series:

   (i) Discovering the World
   (ii) The Moon Follows Me
   (iii) 'Cos It's Naughty
   (iv) Playing the Game

   British Broadcasting Corporation
   135 Maitland Street, Toronto, Ontario.

2. Child of the Universe

   Distributor:
   International Tele-Film Enterprises
   221 Victoria Street, Toronto, Ontario.

3. And Sow Tomorrow

   Toronto Board of Education
   155 College Street, Toronto, Ontario.

4. Let's Look at Learning

   Ministry of Education, Ontario
   Mowat Block, Queen's Park,
   Toronto, Ontario.

5. Learning About Thinking and Vice Versa

   Cinemedia Ltd.
   c/o Encyclopaedia Britannica
   151 Bloor Street, Toronto, Ontario.

6. How Do Children Think

   British Broadcasting Corporation
   135 Maitland Street, Toronto, Ontario.

excellent information

THE
ARTS

THE ARTS

INTRODUCTION

THE ARTS, PROGRAM AND PRACTICE

- Drama
- Music
- Physical Education
- Health Education
- Visual Arts/Design

APPRAISAL AND THE ARTS

THE CHILD AND THE ARTS

The city had never before and has never since witnessed such a celebration as that which greeted the adventurers on their return from the battle with Humbaba. A holiday was declared. All work ceased. Feasts were laid out everywhere, and the people went up and down the streets carrying standards and bright banners. The young and the old gathered in the family house and sat cross-legged while the two heroes told the story repeating it again and again and answering all the questions that were asked. Singers immediately made up long songs about the adventure; dancers acted it out; and scribes laboriously engraved it on stone, or pressed the words and letters into tablets of wet clay. Runners carried the clay tablets from city to city....

from Gilgamesh
by Bernada Bryson

"Is there nothing I can do to make up for the harm I have done?" he asked.
"I do not think you can bring back the swans", said the priest. "But perhaps you can find a way to help the villagers remember the beauty that once was theirs to enjoy".

from The Golden Swans
by Kermit Krueger

Indian Mask

Famous Painting

Ceremonial

Child's Clay Piece

The Arts have always held a central position in the community life of older cultures both primitive and aophisticated. Western societies on the other hand have tended to treat the arts less seriously in the learning experiences of the young. Too often the arts have been considered as merely pastime activities. For the most part, education in dealing with the arts concentrated on analytical study, imitation, or in the case of drama and music, performance. Plays were read and acted, music sung and played according to the directions of the composer and the interpretation of the teacher, poetry memorized and recited and objects drawn with pencil or brush. It has only been in recent years that drama, movement and dance have broken away from the domination of performance and asserted the claim of the individual imagination to find expression. How can we as teachers use the historical evidence of the past to develop curricula in the arts for the children who will live in the future?

IMAGINATION IS MORE IMPORTANT THAN KNOWLEDGE, Albert Einstein.

CONFIDENCE AND FAITH IN ONESELF EMERGE WHEN THE CREATIVE SPIRIT IS CULTIVATED
Hughes Mearns.

Unlike Prometheus, the god worked slowly. He seemed to seek the form within the dull shapeless day. Even as Hermes watched, his burnt and twisted fingers probed and dragged at hair, cheeks, lips, breasts and limbs as if he was freeing rather than creating them.

The God Beneath
The Sea

Leon Garfield and
Edward Blishen

The Arts are entwined with a child's thinking and feeling, his hopes and his creative development. They give him many opportunities to grow in expressing himself, and to enjoy his and other's human expression of joy and sorrow, fear and wonder.

Every child has his story, his song, his handiwork, his "imagined" life. However, his hands are guided by what he sees and touches, his hoard of words can be enriched and his body encouraged to move by the sounds and rhythms and stories he hears.

As you are guided by the child's signals of responses and pleasures and questions, you introduce him to new materials, another experience and the opportunities to share himself with others. It is not sufficient to relegate such goals solely to the arts. The creative life should be the goal of all education.

Seeing new relationships in everything feeds the imaginative life of man at all agea. Henry Moore's gardener, after coming to work with him, began to see sculpture in his garden. Henry Moore, on the other hand began to see gardens in his sculpture. Potholes worn into limestone suggested to Moore the human shapes he creates from the rock - "the crag suggests the king". So often the material shapes the response, the imagination.

The more the child's imagination is stimulated, the more connections he can make. The more he understands the meaning of things, the more easily barriers can be broken down between him and other people and between him and the materials which are to be shaped. People too are his world and he has to discover how they respond, how he responds to them, and he learns about and through them just as he learns through the materials of art. Children experiencing this kind of community are more likely to learn tolerance, responsiveness, openness and understanding. He must never be asked to deny his own experience, but he will need to increase his knowledge and his skill through selecting and mastering things, through observing and working with others and through becoming aware by reflection and discussion with his teachers.

A child in full health of his mind will put his hand flat on the summer turf, feel it, and give a little shiver of private glee at the elastic firmness of the globe. He is not thinking how well it will do for some game or to feed the sheep upon... he has an ecstatic sense of the thing's inherent characteristics.

C.E. Montague

All life is an echo of our first sensations.

Herbert Read

Our forefathers were in daily contact with their environment. Not only did they build their own homes and grow their own food, but they also made their own music and art. Even in the last fifty years there have been dramatic changes. The local hardware store has lost its bin of nails and seeds are no longer available to run one's fingers through, the grocery store no longer smells of freshly ground coffee or oranges that have gotten a little too old. The smell of freshly baked bread or the taste of one's homemade rootbeer are sensory experiences that have almost disappeared. Possibly today's increased interest in camping is a reflection of the urge to experience the senses more fully.

Viktor Lowenfeld/
W. Lambert Brittain

Children listening to a musician.

Child licking finger which has been dipped in tree sap.

Children have a joy in exploring, investigating and expressing their feelings about their environment. They need to be encouraged to look,

listen,

taste,

touch and imagine.

They must have the chance to feel the texture and qualities of many different things and to create with wood, clay, metal, plastic, paper, wax and a host of other materials.

In this way children come to know materials by interacting with them, learning how they behave and through mastering them, discovering their own gifts and limitations. Experiences in building, moving, singing, painting, inventing and the dramas of speech all have the primary purpose of expanding the youngster's awareness of himself and those things around him by creating opportunities to develop ideas, examine them and to realize that his own opinions about the world matter.

Exploration of the inner self is furthered through free movement, dramatic play and games. Children need to explore the quality and power of their own bodies, develop patterns of expression and control and come to realize the particular uniqueness of themselves. Relationships to other people are also learned through making, creating and listening to music. The world of sound, its textures, qualities rhythms, moods and feelings can be explored through dramatic play and games in which children take roles and exercise sound skills as part of a social group.

Good teaching is not solely the business of instructing; it is also the art of influencing another. Primarily, it is the job of uncovering and enlarging native gifts of insight, feeling and thinking.

Hughes Mearns

Creativeness cannot be taught; it can only be released and guided. This, in essence, is the job of the teacher - to release inner power into productive outer channels.

Mauree Applegate

Look at the rain

One drop at a time

Look at a tree

One leaf at a time

Look at the grass

One blade at a time

Look at the people

One person at a time

Jack Cameron/
Emma Plattor

Parent volunteer helping children collect items from a textile shop.

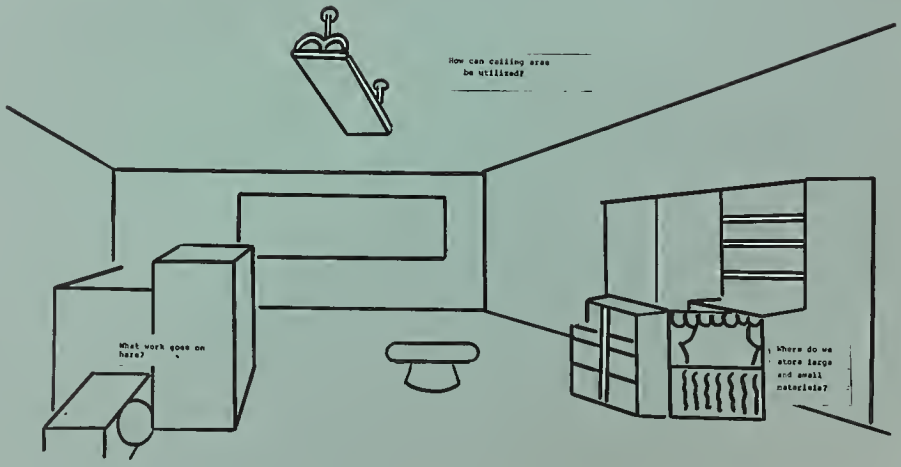
Child discussing music score with another child.

Teacher discussing work with a child.

By providing experiences and the means through which these experiences can be expressed, you will have come a long way towards establishing an environment in which creative work will flourish. Along with this, your program must be planned in such a way that each child has time to assimilate new experiences and extend and develop them. Class periods of fixed duration rarely allow sufficient time for really creative work to develop. Creative experiencea cannot be bound by time. For example, the arts program in schools is education through the senses and sensory exploration should be an ongoing process. Small, ever-changing exhibitions of things both man-made and natural, provide tactile experiences. Tables of musical instruments or materials, left out for continued use will help children to regard the arts as something other than an interlude between other subjects.

Your role must also strike a balance between the contrasting aims of child discovery and adult direction. It is vital that you observe the children at work, interceding when necessary by providing further stimulus, introducing new materials, extending techniques which are being undertaken, encouraging children to broaden their range of activities. It is also vital to know when to withdraw. You mustn't destroy the child's curiosity with technique lessons unrelated to the youngster's particular needs and yet there are concepts which have to be understood if the child is to progress. Inspiring rather than dictating, diacussing, sharing and responding to the feelings and perceptions of children are of utmost importance. By creating situations in which processes in the arts can be examined in as many ways possible, you are providing the kind of guidance that will help the child grow in sensitivity and mastery.

THE ENVIRONMENT AND THE ARTS



No two classrooms provide the same environment and no one classroom should be the same for any lengthy period of time. Too many classrooms are barren and sterile wsrehouses. How can they be transformed into environments where the arts permeate?

To provide individual opportunities for all those who inhabit it, the environment must be varied and rich with opportunities for manipulation, perception and communication as personal experience. This might be accomplished through a variety of interest centres which will encourage children to explore a variety of stimuli in a variety of ways. Here are suggestions which might be useful in establishing environments conducive to work in the arts.

SPACES/AREAS

Flat open space with opportunities for moving, climbing, crawling, balancing music, drama and games.

Secluded or baffled area for music experimentation and other such activities.

Wet/messy area for water, sand, clay, paint and other crestive materials.

Practical Resource Centre for exploring materials and making things with tools.

WORKING SURFACES

Open free surfaces where small moveable box units, level, dividers and moveable furniture can be arranged.

Large and small srea tables, easels. Water-resistent surfaces, sink and easy-clean surroundings. Workbench, racks and dividers for tools or rough surfaces.

Cupboards for large and small materials, racks and vertical surfsces for tools.

Large trolleys, bins and tote-boxes. Clay bin, sand and water tray.

Fold-up gym apparatus.

DISPLAY SURFACES

Vertical display:

Displays of pictures, charts and group productions.

Displays of materials woven, printed and dyed by children.

Displays of children's paintings, pottery models and works by professional artists.

Horizontal

Art objects, musical instruments and displays of materials for sensory exploration.

RESOURCES

Clothes, hats, props, playhouse materials simple screens, puppet-theatre, instruments, sound makers, record player and tape recorder.

Paint, clay, soft stone, paper, card-board, junk of all sorts. Brushes knives, tools. Paint, finger-paint, paper, clay, sand, water.

Woodworking tools, wood, wire, string, adhesive.

Share: Projectors, micro-scope. Math-Science area. Records, tapes, filmstrips, slides, magazines, pictures and books.

Art and materials for display.

Resources for drying and firing clay.

Upon my shoulder
the light of the sun is clear
waiting to be touched.

Ivsns Nejkov
St. David's School
(from Origins 11 July 72)

A patch of spring sunshine
in the corner of a lot
may gleam with the gold
of dandelions.

from City Lots
Phyllis S. Bush

The environment, however, is not just a classroom. It can be a museum, puppet show, shopping plaza, srt gallery, food store, forest, zoo, brook, concert hall or one of msny other locations. All of these yield opportunities for exploration in the Arts. Well-plsnned visits (in the sense that children are prepared to look and find but not told what they must do) snd field trips add an exciting and worthwhile element.

On our street there was an empty lot. It was small, but it was full of junk. There was an armchair with the stuffing coming out. There was an old mattress. There were bottles and automobile tires and other things that people didn't want.

from The Big Pile of Dirt
Eleanor Clymie/ Robert Shore

"The whole world is full of things and somebody has to look for them. And that's just what a thing finder does", she finished.

"What kind of things?" asked Annika. "Oh all kinds", said Pippi. "Lumps of gold, ostrich feathers, dead rats, candy snapcrackers and little tiny screws and things like that."

from Pippi Longstocking
Astrid Lindgren

"WE HAD THE EXPERIENCE AND MISSED THE MEANING". T. S. ELIOT.

What is a sandcastle? It is your private legend, a fortress made of sand and imagination for your own heroes, a stronghold for your daydreams. It is the strong desire to build, to create forms with your own meanings. It is most of all your own, out of your head, made by your hands.

The Art and Industry
of Sandcastles
Jan Adkins

THE RICHNESS OF THE CHILD'S "INTERNAL" ENVIRONMENT MUST NOT BE NEGLECTED OR DENIED. HIS FANTASIES, HIS WISHES, HIS IMAGININGS DIRECT HIS INTERESTS. HE SHOULD NOT BE ASKED TO ABANDON THESE INTERESTS IN ORDER TO RESPOND ENDLESSLY TO EXTERNAL STIMULATION NO MATTER HOW APPARENTLY RICH, HOW CHALLENGING OR "APPROPRIATE TO HIS STAGE OF DEVELOPMENT". THESE WILL HAVE IN THE END NO MEANING UNLESS HE CAN RELATE THEM. LIKE MANY THINGS IN EDUCATION, THE TEACHER'S JUDGMENT HERE WILL ENCOURAGE A BALANCE IN THE CHILD'S RESPONSES TO HIS INNER AND OUTER EXPERIENCES.

THE ARTS PROGRAM AND PRACTICE

... I took out of my pocket a sheet of paper and my fountain pen. But then I remembered how my studies had been concentrated on geography, history and grammar, and I told the little chap (a little crossly, too) that I didn't know how to draw. He answered me; "That doesn't matter. Draw me a sheep...."

from The Little Prince
Antoine De Saint-Exupéry

We hold the present in our hands, hands
that put together new shapes that
gather the fruits of the turning seasons.
Hands that are weaving primal patterns
that give to things a human shape, hands
that grope for forms in clay and grace
the forms of everybody.... hands that play
with the colour of feeling in rooms of the
mind on a silent canvas.

Alistair Reid

(from the film To Be Alive)

It is good to allow children to splash paint on a canvas, to move their bodies freely, to beat s drum without rhythm. Freedom to respond to experience and to use the arts in their own way is important. But growth is a many-faceted thing. Each of the arts has its own tradition, its own content, snd its own disciplines. A satisfying poem or painting may have sesthetic and emotional elements, but it has slso a tough intellectual quality. If the children are not given the opportunity to explore the individusl arts so thst they learn something of the mesning of esch, and something of its discipline and its techniques, then the srts will not be sllowed to contribute to their totsl growth.

"According to Stanislavsky you have to feel like an onion. Do you feel like an onion?" "No in the least", said Harriet. "Oh come on. What are they teaching you in school these days?"

from Harriet The Spy
Louise Fitzhugh

Drama

CONSISTS OF

- playing out and talking about the stories of others
- playing out and talking about your own stories

DRAMA AND ITS AIMS

Drama is struggling, doing and involvement. Through it, a child can extend himself into another life experience, another point of view another style of speaking.

In drama all of the children are involved at the same time experimenting with the flow of thinking, the flow of language and the flow of movement. In this kind of uncritical situation, the child can reorganize experience so that it becoems more meaningful to him. It also enables him to experiment without fear of failure all the ways open to him to communicate these experiences to others.

This can be accomplished by having children work in pairs or small groups simultaneously spread out about the classroom. At times the whole class may work as a single unit, each individual a part of the whole. Such "crowd" scenes are an important way to involve all the children dramatically. Even the shyest child has the opportunity to experiment with actions and words without embarrassment in such situations.

At all times, the children are experimenting not preparing to present finished works to an audience. Theatre concerns performing for someone else. Much development is required if children are inexperienced in drama. When they are placed in performance situations the point of view of the audience becomes a major consideration rather than the development of the children's own feelings and relationships. Theatre is an outgrowth of drama appropriate long after the Primary/Junior years.

There will be times when the use of a gymnasium or large open space would be welcome; however, the average clasaroom is sufficient. It is probably quite important that the children come to associate drama with learning in the classroom setting rather than something "extra" which they do elsewhere.

DRAMA IN EDUCATION

Serves to promote expression of all kinds.

Encourages the free flow of language.

Becomes a learning tool by integrating dramatic work with the learning process and content of other subjects.

Helps children to work co-operatively with others in group situations which involve sharing ideas and respecting the point of view of others.

Increases sensitivity and awareness about others and the world around us.

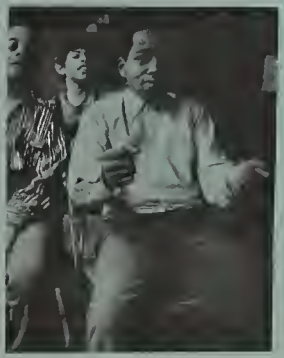
Offers opportunities to exercise and channel emotions.

Provides practice in organizing ideas through the building of stories for group improvisation.

Strengthens concentration and stresses listening as an important part of the communication process.

Makes the school experience with language fun and meaningful.

Follows man's historical way of enacting permanent truths of human sufferings, dreams - his encounters with the magical. "How do we talk to the thunder without using words?"



Children can explore dramatically in the following ways:

(a) Spontaneous Play

Toys and dress-up materials are the stuff of drama for young children as they play with them imaginatively in the play kitchen or doll corner. Such corners should contain toys, hats, "dress-ups", puppets, dolls, props and sets which the children have made. Small portable platforms (suitable for all grades) are excellent too in that they permit children to work with vertical space. The kind of equipment you provide can do much to promote social play and interaction. For example props should be carefully chosen to suggest roles and possibilities but they must also leave plenty of room for the imagination. A red cape, for instance, can become an apron, a bandit's disguise or "Red Riding Hood's" cloak.

Your job in addition to providing a time and climate for this activity is to observe the ways in which children play with materials. Such observation can tell you much about the previous kinds of experiences the children have had, their feelings and their anxieties. Do the children consider a toy ukelele to be a weapon or a sound producing object? Do they pretend to play it as an instrument? Do they elaborate on its use by making it part of a musical group?

Magic Song For Him Who Wishes to Live

Day Arises
From its sleep
Day wakes up
With the dawning light.
Also you must arise
Also you must awake
Together with the day which comes.

Thule Eskimo
(from I Breathe A New Song
Poems Of The Eskimo
Edited by Richard Lewis)

You must also judge when to intervene and make a suggestion which will stimulate play. What props should be added? What materials are inhibiting imagination and should be removed? Your observations will also enable you to plan drama lessons which are based on experiences the children have had or suggest drama sessions which feature new input experiences. The play corner is vital to the rest of your drama program. Under the conditions outlined it can provide the kind of atmosphere necessary for uncriticized expression which is essential for children as they experiment with many modes of communication.

(b) Movement to sound:

Practice in this area helps children to build their repertory of body movements through (i) Whole group movement to strong simple rhythms in which children move the way the sound tells them to;
(ii) Individual exploration in a personal space where body movement explores levels settings and situations;
(iii) Small group movement in which children share a common space and influence each other's movement;
(iv) Movement based on ideas (mime).

Instead of sound, ideas are the stimuli for action. Children try on the roles of all manner of creatures, people and objects. They dramatise their stories, dreams, angers and despairs as they continue to explore their range of movement.

(d) Speaking

The growth of oral expression is a major factor in helping children to learn to read and write. Speech may be fostered through talking about isaues aa a class, with a partner, individually or in groups and playing at incidents as a claas, with a partner, individually and in groups. In auch aituations the children experiment with language for many purposes such as:

(Playing with aounds
(Playing with words
(Describing
(Defending
(Persuading
(Comforting
(Releasing
(Instructing
(Factual Reporting
(Emotional Communication

(e) Combining speech and movement through

(i) Story dramatization in which the children working in groups combine the foregoing activities to play out short familiar storiea in their own words and movements. The plot of the atory is followed but the children inveat it with the detail and dialogue they have created. They might also explore what happened before and after as well as during the incident. They can change the locale, the time or the mood. They can aak, "What would happen if...?"

(ii) Improvisation in which the children working in groups play out their own stories possibly based on ideas derived from many sources auch as picture books, poetry, games, literature, film, sound effects, slides and created objects.

Ibbity, bibbity, sibbity, sa
Ibbity, bibbity, vanilla
Dictionary, down the ferry.
Fun, fun, American gum
Eighteen hundred ninety-one.

Margaret Taylor
from Did You Feed My Cow?

Chickamy, chickamy crany crow
I went to the well to wash my toe
And when I came back my chicken was gone'
What o'clock, old witch?

Children's Games In Street and Playground

Iona and Peter Opie.

Poems, situations, dialogue, songs, action verse, plays, skipping games, nursery rhymes and direct narration become vehicles for the child's own personal interpretation of what they mean, how they were spoken, how the listener is affected and the emotion involved.

The methods used for this activity might include choral dramatization, group oral reading (Chamber Theatre), circle theatre, playmaking (without an audience) vocal jazz and puppetry.

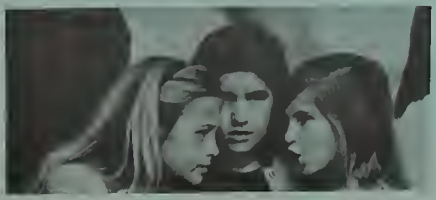
At the end of each oral and dramatic experience, there should be a quiet time. When literature is the source for the dramatization, sitting together to listen to a story is an excellent quiet activity.

Equally important are opportunities to discuss, listen to music or reshape some part of the experience in clay, paint fabric or words.

The boss is in a hurry
Sogetamoveon.
Do not linger,
Load the timber.
The boss is in a hurry
Sogetamoveon.

from No Mules Papas

The work in drama is cumulative. If a group of ten-year olds has had no previous experience with this way of learning, then they must begin in the same way as six-year olds. Similarly, a group grows and evolves with each session. The goals of drama, concentration, awareness and sensitivity must be uppermost in your mind. What you choose to do next will in large measure be determined by what happened today. Always, you will have to observe, analyse, evaluate so that you can structure experiences that will be truly developmental. The activities you choose to dramatize must suit not only your environment but your own ability and the development of the children. If your class doesn't work well in small groups then perhaps the children might do better with a partner or on their own. At all times, the activities you work on must leave room for the children to create for themselves - not become an imitation of the teacher's ideas. You provide the "what to dramatize", the children work out "how to do it". A very subtle balance has to be achieved here. As the children become more experienced in drama they will require less of the "what" but in the early stages your role is important. To all appearances it may seem that you are dominating thus the caution about making sure that the children are not relying too heavily on your creativity.



A drama lesson might last five minutes, it might continue for several days depending on the depth of any one activity. What you must decide is how much time to apend on any one activity when there is so much that can be explored. Rather than teach drama in a vacuum, you can integrate it with many areaa of the elementary curriculum.

For example, children's literature is an excellent aource for dramatic exploration. At the same time drama can bring much to the children's understanding and appreciation of literature. To illustrate you will find that many of the myths, legends and folktales for children have been summarized into tightly condensed pieces for readers who are as yet too young to handle the language of epic writers. When expanded through drama, these highly condensed accounts take on new meaning as movement and dialogue, feeling and form elaborate the narrative. Remember though, that factual content is not what you are attempting to teach through drama but certainly the thoughts and feelings of people are the areas of concern.

Twly Loo served Willy and the summerfolk a supper of devilled eggs, rye tack and pickled pigs feet. After supper, she told their fortunes with an old, tattered deck of cards. Then she told them "The Story of the Purple Glob" which swallowed people up and grew bigger and bigger until....

from The Summerfolk Doris Burn.

BIBLIOGRAPHY - DRAMA

1) Moffet, James. A Student Centred Language Arts Curriculum Grades K-6; A Handbook for Teachers Boston, Houghton Mifflin 1968.

2) Opie, Iona & Peter Children's Games in Street and Playground (London 1969) Oxford.

3) Mearns, Hughes Creative Power (1929 New York) Dover.

4) Way, Brian Development Through Drama (London 1967) Longmans.

5) Barton Booth Buckles Moore Nobody In The Cast, Toronto, Longmans 1969.

6) Goulding D. J. Playacting In The Schools, Toronto, Ryerson 1970.

7) R. M. Pemberton Billing/J. D. Clegg Teaching Drama, London 1965, Univ. of London Press

8) Papas No Mules, London 1967, Oxford.

9) Jacobs, Joseph The Buried Moon, New Jersey 1969, Bradbury Press.

10) Hoban, Russell The Mouse And His Child, London 1967, Faber.

11) Suhl, Yuri & Zemads, Margot Simon Boom Gives A Wedding, N.Y. 1972 Scholastic.

Music

CONSISTS OF

- singing and playing
- listening
- discovering and creating

He stood up suddenly, raised his harmonica to his mouth, and began to play.
He played purples and grays and rain and smoke and the sounds of the night.

from Apt. 3
Ezra Jack Keats

Through love, death, loneliness, companionship, fun, humour, war, hope, work and play music touches the lives of all of us and is part of all human experience everywhere. Sound, like sight and the other senses, invites us to explore and heighten our awareness of and sensitivity to ourselves and our surroundings.

Singing and Playing

The major vehicle for musical experience in the primary/junior years will be the voice, but children must also have the opportunity to explore other forms of expression in sound. Movement and drama, language and visual arts combine easily with music. Similarly, much creative music can arise out of other areas of study. Where music forms a partnership with movement and drama, there are opportunities not only for creating music, but for providing children with an increased range of musical styles to listen to as they move to it or play out their stories to it. Each of us carries within himself all the music he has known. Wherever possible, listening to music is important.

While you can organize musical activities that focus on singing, playing, creating, discovering, and listening, you must realize that these aspects will frequently be inseparable one from the other; when a child sings a song his performance and his interpretation will be different from anyone else's and therefore could be a form of creativity; and when a group of older children create a piece of music to illustrate a short poem or to enhance the atmosphere of a story, they will listen closely and critically to make certain that the balance, tone and colour are appropriate to the poem or story.

"Is there a singer in your village?"
"There is my lord", said the music master. He is a boy who sings in the woods at night.
"That boy is mad!" said some of the others.
"I find no madness in him", said the music master. "His voice touches the heart, and the songs he sings are like no other songs".

from The Moon Singer
Robert Bulla

There was an old person of Bradley
Who sang all so loudly and sadly;
With a poker and tongs, he beat time
to his songs,
That melodious old person of Bradley!

Edward Lear

Everything possible must be done to provide children with opportunities to sing in an easy natural way, to enact the music which is within them and to build up a wide repertoire of songs from different times and places, and from different styles and idioms. Included in this will be everything from nursery rhymes, which are as old as language itself, to folk songs of the past and present. Songs should be selected for their strong rhythm and melodic line and repetition. Although selections must be based on interest and appeal for children, intrinsic musical value must also be considered.

Singing is a major avenue through which children can discover the joys of music, participate in a group or social activity, and learn to express themselves through music. In their pre-school years most children will have sung naturally, joyously and spontaneously. The experience of learning new songs and, for some of discovering for the first time their singing voice will bring opportunities for even greater pleasure. Children like to sing and if given frequent opportunities, many problems of pitch and tone will disappear. It should be pointed out, however, that while many children will sing effortlessly and tunefully on the first day of school, others may not have reached that stage of development. It is wiser to allow the child of six or seven to sing when he feels ready to do so rather than to rush him and cause embarrassment or self-consciousness. The child should not have to sing solo or as a member of a small group unless he is willing.

Children can explore many facets of music - rhythm, pitch, loudness, phraaing - through the singing of the most simple aongs. It is a joyful experience and it can be a learning one as well.

Listening to Music

All musical experiencea begin with liatening and a chief purpoae of music education is to guide the child not only to hear but to listen with enjoyment, feeling and intelligence.

So important is this aspect of music, it is conaidered here as worth separate consideration.

Because we are almost constantly expoaed to a high level of noise - that of traffic, heavy machinery, or muaic piped into shopping plazas and office buildinga, we often " turn off " the sounda around us aa a meana of self protection. In the process, however, and by expoaure to the second rate, we become leas sensitive and less aware.

The listening experience ahould avoid too academic and formal an approach. At the same time, there should be some connection between listening and the performing, diacovering, and creating aspects.

Suggestiona for improving skills are the following:

(1) The children listen to and identify sounds in the claasroom. Sounds collected in the environment can be claaaed in different ways such aa natural, man-made then recorded, compared and diacussed.

Every sound casts a spell.
A word is a bracelet of voice-charms.

Murray Schafer.

A centre of sound producing media of various kinds including pitched and unpitched percussion instruments might prove useful for further experimentation.

(2) Invite professional musicians to visit the school to perform, demonstrate instruments, and discuss their music with children.

(3) Teachers might arrange for students from neighboring secondary schools to share their music with children.

(4) Sound games can be invented in which signal directions are sounded out to blindfolded classmates.

Much of the listening program will probably make use of recordings, either tape or record. These might be shared with the whole class or set up for individuals to use when they wish to. Taped radio school music broadcasts or cassette tapes might also be useful.

Machines used should be of the highest quality available. Listening to music gives children opportunities to explore many types and complexities of music of a quality far beyond what they might sing or play. The music used should represent a wide range of styles, but these don't have to be presented in watertight compartments. All categories of music might be used according to their suitability.

DISCOVERING AND CREATING MUSIC

The production and selection of sound, its arrangement in significant patterns and structures is both intellectually demanding and stimulating. Providing the environment, opportunities and materials to permit creative music activities are present, most children will experiment freely and easily. During playtime, children often sing to convey their feelings or thoughts to their playmates. They enjoy playing with sounds and instruments and use sound to accompany their play. If the atmosphere permits, the creative spark can grow. Exploration and creating of music could begin with singing and responding to - rhythms in the Kodaly approach. Dimensions first of rhythm then melody and tone colour can be added to children's songs by instruments of definite and indefinite pitch. Instruments developed by Carl Orff are worthwhile in this context. Although there are many instruments designed for use with this age group, lack of funds does not have to inhibit exploring and creating with "found instruments". Anything will make a sound. Have the children find out how many sounds any object makes. Then explore with them how these might be used. Children can, for example, explore timbre or tone by:

(1) identifying sound made by familiar instruments, by voices and objects.

(2) using songs which can be accompanied by simple sound effects with which children can experiment.

(3) listening to voices and instruments and responding to them as light, heavy and the like and picking out instruments that ring, rattle, clack, boom, hum.

(4) listening to recordings of voices, instruments, and combinations - distinguishing different voice sounds, varying pitch and ways of using instruments, recognizing combinations of two or more instruments.

(5) using different instruments when composing.

(6) inventing sound conversations between various objects. "How does a pop bottle communicate with a tambourine?"

The children may require some guidance and encouragement in discovering the sound possibilities of instruments.

You may also help children to build a musical vocabulary by discussing with the children the work they are engaged in. The greatest difficulty faced by teachers in this kind of work of course is when to offer advice and when to stand back. There is also the question of how much time to spend on creating music and what proportion to spend singing and listening. The creative approach to music has been found to be most successful where singing and listening are well established and continue side by side with improvision methods.

It is important that the student begin to learn to select and manipulate the materials of music through composing and performing before he concerns himself with how others have done it.

Robert W. Sherman
Music Educator's Journal
Vol. 58, No. 2, Oct./71.

Bibliography for Music

Chapotto, Irving. Teaching music creatively in the elementary school. New York, McGraw-Hill Book Co. [c1969]

Darazs, Arpad. Sight and sound; visual aid to melody and harmony. Oceanside, N.Y., Boosey & Hawkes, Inc. [c1965]

Dennis, Brian. Experimental music in schools: towards a new world of sound. London, Music Dept., Oxford University Press [c1970]

Marah, Mary Val. Explore and discover music; creative approaches to music education in elementary, middle, and junior high schools. [New York] Macmillan Co. [c1970]

Music Educators' National Conference. Perspectives in music education, source book III. Selection Committee: Thurber H. Madison, Corwin H. Taylor, Richard H. Werder. Editor: Bonnie C. Kowall. Washington [c1966]

Music Educators' National Conference. The study of music in the elementary school; a conceptual approach. Edited by Charles L. Cary. Washington [c1967]

Ontario Institute for Studies in Education. Creative Arts Committee. Music Sub-Committee. The new approach to music. Junior division. [Prepared by Harvey Perrin and others] Toronto, Holt, Rinehart and Winston of Canada [c1972]

Bibliography for Music

Ontario Institute for Studies in Education. Creative Arts Committee. Music Sub-Committee. The new approach to music. Primary division. Prepared by Harvey Perrin [and others], Toronto, Holt, Rinehart and Winston of Canada [1970]

Paynter, John. Sound and silence; classroom projects in creative music. London, Cambridge University Press, 1970.

Sándor, Frigyes, ed. Musical education in Hungary. [Translated by Barna Balogh, Zeuzsanna Horn and Pál Járdányi], Budapest, Corvina [1969]

Thomas, Ronald B. MMCP interaction. Elnora, N.Y., Media, Inc. [196?]

Thomas, Ronald B. MMCP synthesis; a structure for music education. Elnora, N.Y., Media, Inc. [196?]

Wheeler, Lawrence. Orff and Kodaly adapted for the elementary school. Dubuque, Iowa, W.C. Brown [1972]

PHYSICAL EDUCATION

Here is Edward Bear, coming downstairs now, bump, bump, bump on the back of his head, behind Christopher Robin. It is as far as he knows, the only way of coming downstairs, but sometimes he feels that there really is another way, if only he would stop bumping for a moment and think of it.

from Winnie The Pooh
A. A. Milne

In Physical Education the child's own body is the means by which he develops:

(a) expressively in an aesthetic sense - the development of awareness and sensitivity towards space and effectiveness of bodily movement.

(b) in a communications sense - movement is a young child's initial means of communication - before he is able to use words in an oral or written way. The Dance aspects of Physical Education can develop into a more sophisticated means of communication in which movement itself becomes more vivid and relevant than words.

(c) functionally in relation to the environment - a child through Physical Education can learn to manage and control his body in relation to his surroundings - the room, equipment, apparatus, people, the outdoors.

Movement is an integral part of a child's total development and we are depriving him of vital elements if we neglect the physical aspects of his growth. The exuberance and pleasure the child experiences in these activities should not be denied him for any reason.

The body is the medium through which he first develops a consciousness of himself as a person.

Efficient management of the child's body is necessary for his whole self-concept and affects his relationships with other people - A child who is less co-ordinated tends to lack self-confidence and one who lacks confidence in himself moves in a less co-ordinated manner. You need to treat this child with special sensitivity so that he may experience in the gym some measure of increased satisfaction.

A young child has sheer appetite for movement. A good Adventure Playground with steps, tree trunks, tunnels, hillsides and slides provides endless opportunities for testing and using his body and developing control of it.

Young children need to develop versatility in movement rather than specialization in a particular skill. We are not trying at this level just to develop good basketball or baseball players, but rather children who have had experience in using balls of various sizes and weights in many ways and who will eventually be able to use them in a wide variety of more specific situations. Children need activities of a gymnastic and athletic type as well as ball games, swimming, dance and drama. A well-balanced program should include all these aspects of movement.

The individual development of a child requires that he be given a role in working out his own movement and his own way of developing skills - He needs opportunities to explore the possibilities of movement:

- rolling
- travelling
- jumping
- twisting
- curling
- controlling a ball.

He needs experience in selecting the action suitable for his purpose and he needs opportunities to consolidate his efforts with practice.

The atmosphere in which he works (appreciation, encouragement, etc.) is influential in chanelling his natural appetite for movement into productive areas when he begins to feel the desire to develop skill. His early movement experiences will help the child to analyse the nature of his movement and give him an increasingly firm base on which to develop efficiency and skill.

The following items can be used as themes for investigations in any of the areas of Physical Education mentioned above.

BODY AWARENESS - ways the body can move.

1. Whole body movements such as
   (a) functional capabilities of the body - stretch, twist, curl
   (b) co-ordinated actions - skip, hop, run, roll, etc.
2. Individual parts of the body - arms, legs, trunk, fingers, hands, knees, head, etc. - awareness of when each is being used or emphasized.
3. The body supporting weight:
   (a) support on different parts, transference of weight from one part to another (on the spot or as a means of locomotion)
   (b) balance on specific parts.
4. Using different body shapes - on the floor or in the air.

SPACE - where the body can move:

1. Working on the spot.
2. Travelling and making pathways.
3. Movement in different directions - forwards, backwards, sideways.
4. Movement at different levels - low, medium, high.

QUALITY - how the body can move:

1. Movement with variations in time - fast, slow, suddeo, sustained.
2. Movement with a strong or light touch.
3. Movement with variations of flow.

RELATIONSHIPS - movement in appropriate and functiooal relatiooship to:

1. Size and shape of the room or play area.
2. Equipment (balls, ropes, hoops, etc.), apparatus (benches,mats, etc.) nets, goals.
3. Other people - a partner (N.B., a very young child needs to experience long exposure to working alone before he is ready to adapt to working with even one other person).
4. Members of small groups.
5. Members of a team.

These experiences in movement can be approached in any order but within one lesson points from at least two categories may be appropriate:- the transfer of weight from one part of the body to another - relate this problem to various types of equipment. The needs and priorities of each particular class will be different and part of your responsibility is to judge those needs by careful observation of the children in front of you.

INTEGRATION - Movement education is an essential part of the curriculum in its own right, but gains by taking advantage of the opportunities for integration with other aspects of the program.

Perhaps the dance aspects of movement offer some of the more obvious possibilities for integration. The movement involved in dance is a delight for its own sake. Dance demands imagination, sensitity to self and others and sincerity of expression. These are the qualities the teacher should try to encourage.

All young children express their feelings through movement; a child stamps his foot when angry, takes a joyful leap of exuberance when he is suddenly pleased.

With suitable stimuli - or motivation - the teacher can lead this natural movement into dance. Percussion instruments offer some of the more satisfying forms of stimuli in the early stages when children are learning the elements of bodily control and exploring the various aspects of movement and play. Either in your hands or those of an individual child, a definite rhythm can be established without the sometimes confusing addition of a melody. At a later stage a short piece of music or a movement idea (contrasting strong and light movement) can provide motivation and direction.

A dramatic story, a verse or a poem which has stirred the children can be used as stimulating points from which to initiate movement of a dramatic nature. At a later stage when both you and your children have together developed a good repertoire of dance movement, this may be integrated with a theme from the visual arts - picture or statue or with creative music. Movement in dance and drama can stimulate ideas and emotions which evolve into writing or visual arts.

The extension of vocabulary becomes a two-way street - specific words suggest specific reactions in terms of movement, and movement itself produces the need for an enriched vocabulary and the introduction of new words.

One of the joys of working with young children is that they are seldom self-conscious or aware of the "subject area" they are in but are usually ready to exoress themselves in paint or other materials, words, sound or movement, or move freely from one to another.

Children need <u>time</u> to experiment and explore in terms of movement

"It is difficult, when a piece of work is nearing completion, to say what contribution each area of study has made, for each leads imperceptibly into the other", <u>Film - Free To Move</u>.

They need time to play with ideas. They need help in clarifying both their ideas and their movement. You must have sensitivity to the needs of the moment - when do you leave the child to solve the problem in his own way and when do you intervene with a specific suggestion to an individual or group? There is no blueprint answer to this question but skill in recognizing the appropriate moment will improve with your knowledge of the children in your care, through your experience in closely observing their movement with increasing understanding. Your perceptions will be sharpened by studying good sources in the development of movement in all aspects of the physical education and its related areas.

REFERENCE BOOKS

Physical Education - A Movement Orientation, Shiela Stanley, McGraw Hill Co. of Canada Ltd., Toronto, Ont.

Introduction to Movement Education - An Individualized Approach to Teaching Physical Education. G. Kirchener, J. Cunningham, E. Warrell (Simon Fraser University) Pub: William C. Brown, Dubuque, Iowa.

Creative Dance On The First Three Grades - Joyce Boorman, Longman Canada Ltd., Don Mills.

Creative Dance in Grades Four to Six - as above.

HEALTH EDUCATION

Andrew Marcus wanted freckles. Micky Lane had freckles. He had about a million of them. They covered his face, his ears and the back of his neck. Andrew didn't have any freckles. He had two warts on his finger but they didn't do him any good at all. If he had freckles like Micky his mother would never know if his neck was dirty. So he wouldn't have to work.

from Freckle Juice
Judy Blume
Four Winds

HEALTH EDUCATION

Health should be regarded as a positive state of physical, emotional and social well-being to be sought and attained, not merely an absence of disease. Health must, of necessity, be the combined responsibility of home and school, and health education will fail if the school does not work with the home. To be successful, health teaching must encourage the development of sound habits of diet, hygiene, posture, clothing, behavior and the like, based on understanding. What the child learns in school should aim at improving the general pattern of effective and enjoyable living.

Health must therefore be regarded as a way of living which permeates the child's day. It must deal with his dressing, eating, toilet habits, social and oersonal behavior, sport and work habits.

The young child has a tremendous adjustment to make to new emotional and intellectual tasks, to strange adults and other children when he first enters school. Frequently, coping with these new experiences produces tensions which show themselves in temporary relapses into childish habits: nail biting, thumb-sucking, toilet-training lapses, crying, dependence on adult attention or jealousy of others. You need to be sensitively aware of this, accept it and be ready to help the child to regain security and begin to move forward again by becoming involved in activities and skills, and finding his place in the social group. For good mental health, children need an emotionally relaxed and happy, but intellectually stimulating school atmosphere. A feeling of reasonable success in their day to day activities is necessary for good mental health.

Pupils engaged in purposeful and self-rewarding activity with a sensitive consistent teacher who makes demands appropriate to the child's level are in a happy situation.

Between the ages of 5 and 8 years the child grows towards independence in motor and social skills. He begins to comb his own hair, brush his teeth, tie his own shoe laces, dress himself and perform simple tasks around the house or at school. The age at which each individual can accomplish these tasks will vary, as any primary teacher will know. It is a fascinating experience to watch each child develop at his own rate, not only physically but in his feeling of confidence, in his sense of responsibility and in his awareness of how to look after himself.

Towards the end of the junior level, wide variations in the development of children become increasingly noticeable. The same child may even vary in the maturity of his behaviour from day to day. Differences in the development of boys and girls are becoming evident. Some girls will already be advancing into bodily and emotional adolescence, while most boys will still be in late childhood. Some girls begin their growth-spurt at about ten years and most girls reach skeletal maturity well in advance of the boys.

Mental ability and social maturity have a significant though low, relationship with height, weight and pace of development. Thus, the fast-developing children who grow more quickly and enter their growth-spurt earlier are normally taller and heavier and are also the more able. For this reason, girls have a distinct advantage over boys in all areas of development.

The early years at school offer an ideal period for the formation of good health habits. This is a time for establishing sound eating and nutritional practices - the need for a good breakfast at the beginning of the day, the avoidance of unsuitable in-between meal snacks and the balancing of diet. The young child easily forms marked likes and dislikes in food - perhaps the taste of a new dish is too strong or the colour or texture unattractive. Food arouses strong emotional reactions in children. Frequently a child can be encouraged to experiment, along with friends at school, with food which he does not encounter or would be loath to try at home.

Children's questions will provide opportunities for a sensitive and alert teacher to further the course of health teaching, often in an incidental way. You should take advantage of an opportune moment such as the arrival of a new baby at home, the nurse's visit to the school, a child's spontaneous question about growth or the function of his body.

Some themes may be"

1. The processes of life

   - similarities and differences in the development of plants and flowers, animals, fish, birds and man.
   - the need of all living things for nourishment, air and water, although all are unique and develop in their own way.

2. Relationship between development and abilities, attitudes and behaviour:

   - changes in growth and appearance - similarities and differences - the wide range in individuals (plants, animals and children)
   - effects of differences in age and development on feelings, social relationships and the ability to perform mental and motor tasks.
   - maturational differences between boys and girls (these can be related to graphic reoresentation in Communications and Environmental Studies).

3. An understanding, in simple terms of the major parts of the body, and of the mechanisms which allow the body to be nourished and to develop effectively. This must take account of the child's level of development and ways of thinking:

   - the whole body works together even though each part has its own particular use.
   - the effective functioning of the body helps towards a general feeling of well-being and a joyful appreciation of the quality of living.
   - the senses, the skeleton and muscles (movement), body fluids, tissues, organs, the body thermostats and periodic processes. An informal approach to the inter-relationships of systems and the adaption of the body to its environment. Questions which arise, might include, for example:
     - why do we perspire on hot days?
     - how does our temperature keep constant?
     - why do pulse rates change?
     - how do we cope with cold, heat or effort?
     - when and why do we feel thirsty?

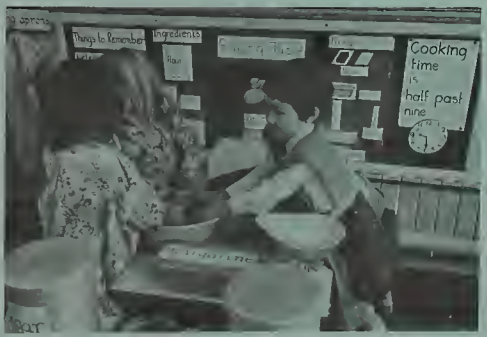
4. The need for nutrition:

   - nutrition depends not only on food substances, including vitamins and minerals, but on appetite and eating habits.
   - food digests better when eaten by happy people in a happy atmosphere.
   - teeth - the digestive tract
   - rest and relaxation
   - excretion and cleanliness
   - personal habits - cultural, social and ethnic differences affect behaviour and attitudes - these differences must be treated sensitively in a multi-cultural community.

5. Ability and mood modifiers (at the Junior Level) - the wide range of substances used by man to increase satisfaction, modify his mood or behaviour, or alter his perceptions:

   - certain substances used for dietary or social reasons
   - pain relieving drugs
   - inhalants
   - tobacco
   - alcohol

6. Some environmental conditions affecting growth and development:
   - favourable conditions necessary to attain optimum growth and development and to protect against hazards (clean air, unpolluted water, warmth, good clothing, good housing)
   - hazards in the home, the school, the street and locality (accident, illness)
   - social, medical and police services in the local area.



VISUAL ARTS
DESIGN

On foggy mornings, Charlotte's web was truly a thing of beauty. This morning each thin strand was decorated with dozens of tiny beads of water. The web glistened in the light and made a pattern of loveliness and mystery, like a delicate veil. Even Lurvy, who wasn't particularly interested in beauty, noticed the web when he came with the pig's breakfast.

from Charlotte's Web
E. B. White

DESIGN

Design is an integral part of the total environment, both the natural and man-made. It is found in craft, technology and art. Design is the vehicle used to put ideas into form. Design requires experiencing, reacting, sensing, recalling, discussing, imagining, discovering, thinking, planning, organizing, experimenting, expressing, making, evaluating and remaking.

The painter, architect, photographer and engineer are all involved in designing. They are all concerned with arranging materials to produce forms effectively.

Paintings may be produced for only aesthetic reasons but a building or bridge must also be functionally efficient. While aesthetic experience may be stimulated through such things as colour, texture, light and line, the functional design aspects are related to a pleasing and relevant use of materials.

In a city, the modern child often lives in a visual wilderness, with his senses assaulted by competing and glaring neon signs, a forest of electricity and telephone poles, badly designed streets and plazas and anonymous high rise blocks all unrelated to one another or to their environment.

He needs to be helped to appreciate design and colour. This will become the foundation for greater sensitivity and ability in later life to make wise personal choices of furnishings, materials, furniture and all those aspects of life which form part of the everyday setting for many people.

For the child, art and design activity are one. But he should be helped to see the similarities between composition in a painting and what he is looking for through a camera viewfinder. The older pupils should be helped to look at their own pictures and three dimensional productions to assess composition, arrangement, balance and attractiveness of colour.

Older pupils in the Junior Division may be helped to look at the design features in the familiar things around them: classroom furniture, toys, boxes and packages; they can make sketches, compare, make models. They should be led to ask whether a cube is an attractive form for a building or a package, even if it has the maximum volume for a given size. They may ask

what materials are used effectively?

what colours go together?

what is attractive?

when is wood best used?

when is synthetic material an advantage?

The materials used and discussed by the pupil should include the most contemporary, as well as more traditional forms. As in the rest of the arts, the first purpose of work in design is to provide as much experience as possible with a variety of materials, learning about their particular characteristics in solving practical and creative problems. Much work in design can be associated with craft, so that practical resource centres, fitted with tools should serve a valuable purpose in providing the child with the experiences he needs. A range of materials such as woods and wood products, plastics of all kinds, metals, ceramics and packaging products, should be available so that the children can choose to express themselves and assist each other in an imaginative, practical and functional way.

If a material is to be used in a creative design, then children must learn how it can be shaped and formed. To do this successfully, children must have available and be shown how to use a construction area with workbench and hand-tools such as saws, hammers, files, rasps and measuring tools. Associated hardware including nails, woodscrews, nuts and bolts and other fasteners should also be present.

Only this way can children learn the answer to such questions as:

Can it be cut?

drilled?

sawn?

painted?

glued?

Is it strong?

Is it rigid?

Can it be used?

Will it work?

Children may look at and compare the design and function of tools used by both artist, craftsman and industry. This does not mean to say that they should themselves use a lathe, but they should be aware of how good wood is machined, and how components of furniture are turned.

Pupils should be aware that materials are used by both artists and by industry - for example the use of soft and hard plastics, welding together pieces of metal, processes used by both artist and printing industry. A book is the product of both the technologist and the artist. Pupils, who have themselves tried out potato and lino cuts may be interested in discussing what is involved in reproducing pictures by various

processes in printing;in putting together a line of type themselves, and beginning to look more closely at the different varieties of type face that are used for commercial and artistic purposes. They should be helped to question the relationship between technology and art:

how efficient and attractive is a toboggan?

why is a car shaped as it is?

why are certain bridges or buildings more attractive than others?

why do certain products such as boats and canoes have a lasting effectiveness both of use and of design?

As in any approach to children, this work should not be conducted as a class lesson, or as a unit produced by the teacher. It should arise out of children's involvement and interests, your enthusiasm and the growing awareness that you helped to create in the child of his environment.

This also means that the school must become aware of the visual environment with which it involves the child: The materials brought into the classroom, by you and the children, the arrangement of books and displays, the use of textures materials and colours in the classroom must receive attention if work and design are not to become unconsciously hyoocritical.

Young children react sensually, think visually and approach each new experience with a happy blend of excitement, curiosity and naivété. It is this freshness of sensitivity and eye which we must seek to retain and develop. Children cannot communicate the sense of form, significance or personal pleasure they see in the world around them if they have not experienced them in a more personal way.

Opportunities for you to assist the child to become more visually aware are virtually limitless. Experience can be as simple as taking children for a walk around the block looking for something they haven't seen before, a visual theme search, looking through a magnifying glass or microscope at cells or crystals, staring through a kaleidoscope, smearing paint and folding the paper several ways, spinning paint to paper on a record turn-table, touching a piece of sculpture or as totally involving as an overnight camp-out.

Art as a form of self expression comes naturally to the child even prior to the use of coherent language. Children scribble, draw and paint with meaning long before they read and write.

Through their art, children communicate to themselves about themselves, to themselves about their environment, to others about themselves and to others about their environment. The starting point for any student's creative activity is his personal experience, his own perception of the experiential environment, real or imagined.

The fact that each student has a unique experience and perceives situations differently, implies many things for the program. Most important, it is totally unrealistic to expect an entire class of students to produce what amounts to carbon copy expressions of an experience even as simple as a still life drawing. Each child will be at a different stage of perception and development at any given point in time. Class "skill" lessons are well beyond the ability of some and irrelevant to others.

The learning and teaching of skills and techniques are of course important. Yet children, whether they are involved in an artistic endeavour or scientific enquiry, will not view the acquisition of a skill or a bit of knowledge as relevant unless that skill or information bears on the curiosity, the problem or need to communicate or master at that moment. In other words "skill" learning must arise in an actual situation and should not be practised beforehand or detached from real situations. Skills and techniques improve in application with opportunity for guidance and example by the teacher. The student may not overtly ask for help or realize what precisely he needs. Often it will be the teacher's intuitive judgement which helps to uncover the problem or need and thus suggest the appropriate technique or information to be given by example and invitation, discussion and as little analysis as is needed to communicate the skill.

Materials and Activities

Children's experiences in art should enable them to learn about materials, what they are and what they can do. In the primary/junior years, children are capable of using a wide range of materials. Pencils and paints are only two ways of communicating an idea through line, colour and form. Many more media are available - wax crayons, chalks, oil pastels, dyes, stains, paints (oil, poster, powder, water, acrylic), cameras and materials for three dimensional work such as string, wire, rubber, and styrofoam.

He saw the stack of jam jars. What had he brought those for? It would be too dull just to use them to keep food in. Stig's den wasn't that sort of place. He had to think of a new way of using jam jars. What had he thought Stig's house needed most? A chimney and - yes, a window! A window. Well windows were made of glass, and so were jam jars. Yes, but the shape! Doors were made of wood and so were clothes pegs; ships were made of steel and so were tin can openers. But you can't make a ship out of tin or a door out of clothes pegs. The shape's wrong.

from Stig Of The Dump
Clive King

Even though the whole class is working in a common area such as line, surface or rhythm, each child can have access to materials and a medium he feels useful. Where a multiple approach to a theme such as shape is employed, children might choose to use stones, toothpicks, clay, folded and torn paper, various kinds of containers, wood, paint or junk. Much use can be made of materials found by the children in their own environment.

Not every child will enjoy working with all materials. Many will enjoy simple scrulpture using plasticine, clay or plaster mixtures. Some find a fascination in constructing objects of wood, stones, styrofoam or junk materials. Others enjoy creative stitchery, weaving crocheting and knitting using yarns, woods and fibres of different types or collage type work with fabrics or paper.

Your role in such a situation is to assist and encourage each child or small group of children at a similar level to select and see the possibilities of materials, to explore them with all their senses, to feel the material, stroke it, smell it and discover whether it will bend or break, spring or snap, fly or flop. At the same time children need to develop techniques which will enable each one to extend and improve his personal expression and extend his sense of control and response in materials.

If design concepts chosen by you and the children are broad enough, they should appeal to all the varied experiences and interests of all the children in the group. Much of the stimulus will come from materials themselves. A good deal of the stimulus for expression will also emerge from activities in other areas of the orogram. At the primary level, topics related to home, family, school activities and play, seasonal activities and special occasions will be common. At the junior level there may be some differences in the interests of boys and girls, however, the range of background knowledge of the world has grown immensely by this time and

adventure, exploration, far away places and other historical periods all have possibilities. Rather than undue emphasis on finished products, prime importance will be given to the powers of interacting with materials and communication;that is the struggle to define and express the learning experience.

Your discussion and exploration with the children of what is currently considered important in their work is desirable. At the same time continued encouragement, and discussion of interesting themes are preferable to passing judgement.

It is important that the child be continually provided with the opportunity to see the relationships between his creative activities, the possibilities in his environment and the creative activities of adult artists. Taking walks or excursions for specific reasons such as looking for, noting and comparing, recording and sketching examples of line, shape, texture or other vital themes will help children to learn to focus on and become aware of relevant aspects of the environment. The use of cameras or cardboard viewfinders will help children to look perceptively at framed narrow fields or significant parts of a whole. Taking photographs, making sketches, and comparing both with paintings will bring home to children how art changes perception and patterns the world. Children need assistance to look again at things freshly for their intrinsic merit e.g. colour masses, shapes in eroded hardened clay, linear rhythms in plant growth, trees or buildings.

Display of work should be a continuing and growing aspect of the Art program, although never against the will of the child or for purposes of comparison or competition. The manner in which the child's work is displayed reflects your respect for his effort.

Not only should this include the child's work but original works by professionals. It is vital that children have a wealth of involvement with art forms and the opportunities for personal contact with the artists who are creating *in their local communities*. Hopefully such professionals and other volunteers would be welcome additions to the art program in any school.

BIBLIDGRAPHY - ART

The Arts and their Interrelations	Thomas Munro	Case Western Reserve 1969
Educating Artistic Vision	Elliot W. Eisner	Collier-Macmillan, 1972
Children & Their Art, 2nd Edition	C. D. Gaitskell A. Horwitz	Harcourt, Brace & World 197D
Creative & Mental Growth, 5th Edition	V. Lowenfeld W. L. Brittain	Macmillan 1970
Elements of Design	Donald M. Andrews	Holt, Rinehart and Winston
Design Through Discovery	Marjorie Elliott Bevlin	Holt, Rinehart and Winston
Art for Today's Schools	G. F. Horn	David Publishing 1967
Developing Artistic and Perceptual Awareness (2nd Edition)	E. W. Linderman D. W. Herberholz	Wm. C. Brown Co. 1969
Attitudes in Design Education	Ken Baynes	Clarke Irwin, Tor.
Primer of Perception: Handbook for Artist and Teacher	Stephen Gordon Jennifer Wyman	Van Nostrand Reinhold

APPRAISAL AND THE ARTS

Nowhere is it more evident than in the arts that appraisal is not the same as measurement and should never be categorized by a letter or numerical grade.

Creating in the arts normally grows from:

1. an increasing awareness of form, responding to materials and their possibilities and being affected by a complex variety of media stimuli.
2. techniques and skills or the mastering of media and materials brought about by a wish to communicate and express oneself.
3. an enriched self confidence and self esteem.

These aspects cannot be separated. For example, successful achievement in expressive movement reflects the level of body control and technique, but is within a complex pattern which shows perception by the individual of the meaning and quality of his movement and has emotional and intellectual components.

Assessment in drama requires an even more complex and precise appreciation. The criteria cannot even be in the individual response in view of the collective contribution to drama. Neither can appraisal be based on a "public performance" since this is contrary to the aims of educational drama and the rest of the arts program.

Simple skills such as selecting colour or picking out notes on an instrument are necessary but not sufficient experiences upon which to build true artistic knowledge and appreciation.

Assessment of creative and personal response must be considered an ongoing dialogue. It is concerned with appraising the process by which the individual learns and his achievement as he learns in order to confirm his sense of success and satisfaction. It enables teacher and pupil to guide and improve responses in relation to objectives. These objectives may sometimes be seen by the pupils themselves and at other times need the collaboration of the teacher.

IT IS USEFUL TO DISTINGUISH BETWEEN THE FIRST PERSON, THE SECOND PERSON AND THE THIRD PERSON IN ASSESSMENT.

1. The first person situation is one in which the pupil assessess his own needs, choices of materials, media and judges his own satisfaction. The child is regarded, not as an object to be graded, but as a person whose integrity, response and sincerity are respected.

2. The second person situation is one where the child's peers or teacher respond to him within the learning situation. In such a situation, the child discusses his work, displays his work, interacts with other children in movement and drama grouns and reacts to the constructive comments and criticisms that they make.

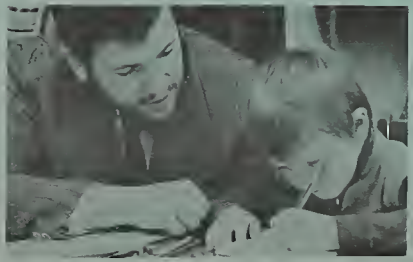
? Is this not repetition

3. The third nerson evaluation involves a dialogue with others outside the teaching situation. Those concerned may be parents, colleagues, the principal or the school system.

   Whenever a third person calls for information, the first questions asked should be why, for whose benefit and how the judgements will be made in terms of the arts.

It is important to note that since we hope the child will eventually appraise and appreciate great works of art, it is important that the most suitable examples of such art be introduced in ways that expand the child's horizons without causing him to devalue his own achievements.

The essential concerns in the Arts are seen as worthy of appraisal in their oroper way. To say that appraisal is not necessary or too difficult to attempt or to equate it with some form of measurement, denies to the Arts their proper value and their unique function.



WILL WE BE DARING ENOUGH TO GO BEYOND

TO THE CULTIVATION OF THE UNIQUELY HUMAN?

- Piaget

Communication

COMMUNICATION

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COMMUNICATION

COMMUNICATION

Introduction

Communication is concerned with two main thrusts. The first of these is the relationships the child builds up with his real and imaginary world. The second is the reception, interpretation, and expression of ideas, attitudes, and feelings developed in this growing web of relationships with others.

Communication begins in experience. It starts with the child having something to say and being helped to find the best way of saying it. The 'best way' of expressing attitudes, feelings, and ideas requires the acquisition and mastery of symbols of many kinds; sounds, gestures, pictures, signs, letters, words, numerals, movement. This supports and extends thinking through the organizing of experiences. It allows information and ideas to be remembered, related, and shared.

Communication involves all the ways that children:

- represent their experiences;
- record what they wish to express;

- translate their experiences or thoughts from one form to another to make them more understandable;

- express themselves through art, language, and mathematics.

Aims in Communication

(i) To achieve the skill of putting personal experiences, both linguistic and mathematical, into public form so that they can be expressed and understood. This will enable the child:

(a) to express his feelings and make his desires known;

(b) to elicit the interest and help of others;

(c) to organize his experience in a coherent way.

(ii) To acquire basic social and intellectual competencies in effective speech, reading and writing in order:

(a) to use these as tools in learning;

(b) to take part in society as a useful contributing member now and in adult life;

(c) to lay the foundation for lifelong learning.

(iii) To help the individual make his experiences more coherent, systematic, and satisfying by:

(a) meeting social needs and relationships through appropriate expression both oral and written;

(b) reducing uncertainty and satisfying curiosity through more information;

(c) extending experience through media such as books and graphic communication;

(d) sparking the imagination through a range of experiences which are not in the "here and now";

(e) exploring and extending the symbolic process itself in writing, mathematical or other forms of symbolism;

(f) establishing and retaining a functional literacy; that is being able to:

- compare positions;
- take a critical attitude to advertisement and propaganda;
- understand graphic and numerical material in books, magazines and newspapers.

(g) taking an active interest in reading in many modes, using libraries and resources to extend thinking and understanding;

(h) reading and enjoying books, periodicals, plays, poetry; appreciating good writing, and developing reading interests in matters related to hobbies.

These aims are best achieved in a climate of acceptance, of security, and of opportunity: acceptance of the child as he is; security for him to learn by trial and error and by play; opportunity to reach out for experiences that stimulate the curiosity and help him learn about the world.

By providing opportunities for real experiences, sensory, active, and manipulative, the school can set the stage for the development and refinement of the skills of observation, discrimination, and classification.

The ultimate goal for each child is to have him become involved with as many means of communication as possible; encourage him to extend and refine these skills to the best of his ability and possibly find his own particular style of communication which is best for him as he interacts with his world and interprets it to others.

Major Areas of Communication

The identification of the components of communication is merely a convenience in designing effective learning situations. They are certainly not experienced as separate entities by children.

Movement: This is a basic means of communicating feelings, ideas, and notions about self. It includes bodily movements such as gesture, dance, creative movement; and drama, mime, puppetry, and role-play.

Representation: This covers a wide variety of activities, pictures, models, analogues, and symbols. These both precede and accompany reading and writing. Preparing and interpreting plans, diagrams and maps is an important competence. Graphic communication covers the representation of visual and spatial patterns and the translation of quantitative into visual patterns as in maps, charts, and graphs.

Mathematics: Although representation and graphic communication have much in common with mathematics as a language they are much broader and some aspects come before mathematics in the child's development. The sensations and actions of the young child soon progress to intuitive judgements about shape, size, and relationships. In turn, as the

desire for more detailed information about relationships emerges, these qualitative perceptions become more precise and measurable, that is, they become quantitative. Measurement leads to number, symbols, and general ideas of notation.

Listening and Speaking: In terms of social utility, speech is the most important means of communication. It involves the art of communicating facts and feelings in face to face situations and by means of a variety of mechanical and electronic devices.

Reading and Writing: Reading is a basic social competence needed for gathering information, for extending experience, and for helping the development of imagination. Writing meets many demands such as:

- recording information and ideas;

- translating experiences and feelings into print;

- communicating actions and impressions;

- social communications.

The Development of Communication

Children choose modes of communication which are appropriate at the moment and in which they feel most confident.

The young child expresses himself first through bodily movements, gestures, and literally babbling or talking to himself. He moves into a stage where the symbols are essentially pictures and then become sketches, similes or analogues of the things and events he is trying to communicate. Later in the elementary school, children move into the symbolic stage when they use and understand symbols and notations.

In a literate society the child from an early age is aware of the varied and complex symbols and forms of communication, including print. He is likely to imitate these in his play. His world is envisioned in terms of television pictures, photographs, pictures, and jigsaw puzzles, X for crosswalk, red for stop, slogans and advertisements, words, letters and figures. The teacher needs to be aware of and use the previous experiences of the child. Communication starts with the child needing to say something and the mode he chooses to express himself. The teacher must constantly review the materials needed by the child to enrich and organize his experiences. This reassessment also applies to the variety of media needed to develop the skills and technigues of communication.

It is through mastering materials and media that effective communication takes place and the individual develops a personal way of expressing himself in paint, clay, wood, model-making, reading or making a map or a graph or using words to speak, read or write. This is where Communication shares many common boundaries with the Arts. Communication draws on the materials of the Arts to give form to what has to be expressed; the Arts give the material form to communication and expression.

At the earliest levels, communication takes place through mime and movement, but in the Arts, movement is taken up and developed from its original components into a much more powerful and organized way of expressing feelings and dramatic situations. Child drama belongs to both Communication and the Arts, with one foot in imaginative play and the other in movement or dance. Mime, movement, and dramatization are fundamental forms of communication. They are basic to the teacher's effective communication with his children.

Appropriate Forms of Communication

The school has a vital role to play in helping children choose appropriate media to record, represent, and communicate a particular experience or piece of information. For example:

- to record bird calls or street noises, the child may learn to use a tape-recorder;

- to record the track of an animal, the child may take a cast;

- to record a group of trees or buildings, the child may sketch or learn to use a camera;

- to state facts clearly, the child will need to learn how to speak and write precisely and to use a dictionary;

- to express feelings and observations precisely, the child will need to become aware of the emotive aspects of words, their rhythms and sounds, and respond to these through the medium of prose or poetry.

The task should stimulate the choice of an appropriate response and medium.

In summary, the task is often the translation of one kind of experience into another form which is more meaningful or more systematic. A child may translate a visual experience into words for his friend and teacher to share. He may organize his visual impressions of trees or animals into a schematic picture or arrange toys, sand and blocks into a display which tells the teacher how he views his world.

Play in Communication

Imaginative play is a crucial aspect of the young child's experience. Through play he explores, manipulates, and interprets the environment and experiments with different means of expression. Play can be free from external evaluation and judgement and can, therefore, allow a child to build his own strategies for acceptance and rejection, for leading and conforming. The child can learn to identify with the thoughts and feelings of others. Play enables a child to try different styles of action and communication without long-term commitment.

Play can take place everywhere in the classroom and can involve exploring materials (paper, clay, paint, and water) and manipulating words and symbols. Word games, puns, recognition of differences and similarities between sounds and symbols can all heighten a child's awareness of and competence with communication. Children can assume roles by imitating people they know or would like to know.

Play provides an excellent context for the teacher to observe the child, to assess his stage of development, and to encourage those experiences that further his growth.

The teacher should know when to intervene unobtrusively to add to or change a play situation, when a toy telephone, a costume, a question, or a suggestion will further the fantasy or broaden the experience.

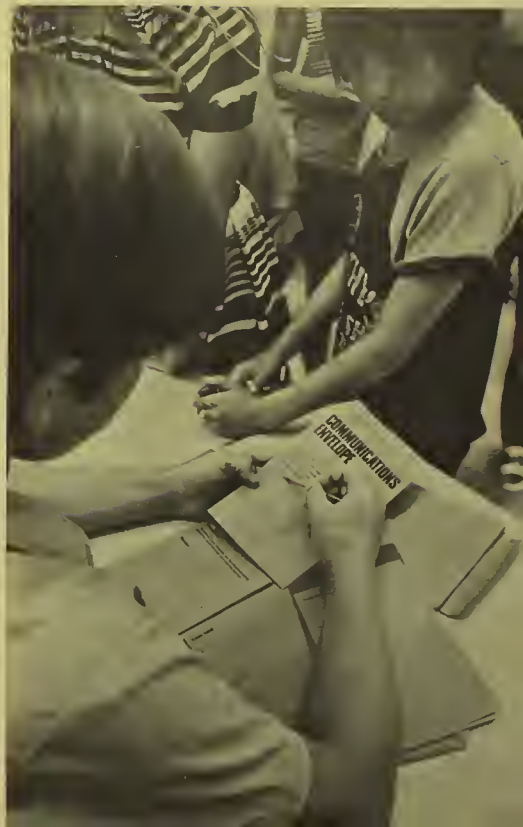
Play can influence a child's view of himself which in turn has a profound effect on his later life. Therefore, each child must have many opportunities to experience success in privately significant and socially important events. Children who are inhibited by low self confidence may be freed by an invitation to assume a role and choose what powers they have. They may be enabled to achieve real skills from the position of one imagined role that they would be reluctant to attempt after many personal failures.

More formal play opportunities such as simulation games (especially those involving strategy) and structured debates (on imagined events and circumstances, for example) help children perceive a situation by virtue of their involvement. Such activities can extend a child's ability to notice and respond to the people, events, and physical surroundings. The capacity to see another person's point of view can be enhanced through role-playing which again, in some form, is a natural part of play. The teacher merely heightens the experience without stifling the child's natural inventiveness.

Older children enjoy the challenge of pretending to be famous characters

in history, in science, or in literature. Both the individual and the class as a whole can become involved to a far higher degree than through purely cognitive contact. Abstract elements such as sequence of time, social custom, and personal relationships can also be explored effectively through such a strategy at this stage.

Out of imaginative play comes a variety of language, dialogue, fantasy, role-playing.



Environment for Communication

One of the primary responsibilities of the teacher is to prepare an environment in which learning can take place. This is true for all areas of the curriculum, but there are some considerations that are especially important for communication.

Some of the areas which might be considered are the following:

. an area where a child can read or be by himself, with care being taken that the area, however small, is attractive and comfortable;

. an area where conversations between two or three people can take place with ease and without undue distraction;

. an area where discussions can be held with small groups; this might be the main teaching area;

. an area where the whole class may meet together at one time. Best use of space may suggest that this can be accomplished by means other than standard desks;

. an area where children may listen to records, tapes, live reading, or music. This area might have several sets of headphones;

. an area where children can use a variety of materials to express themselves in writing, painting, construction, clay, and a variety of other materials;

. a small library area with books, magazines, pictures for information and enjoyment. Stories written by children themselves could be kept here for others;

. a place where new and interesting objects and displays can be shown.

Not all of these areas need to be operating at all times during the year, nor do they have to be distinct in terms of use. Changes in organization will increase the variety and therefore the range of free flowing communication that the program should encourage.

LANGUAGE

People use language to interpret experience, organize it, record it, and communicate it to others. Language develops from continuous interaction with people and is closely entwined in the process of regulating behaviour and directing and shaping thinking.

Language is the major vehicle of communication and an indelible reflection of the individual and his experiences. We learn to speak by speaking; we learn to write better by writing; and we learn to think mathematically by encountering number, space, and measurement in the real world.

For each child, language begins and develops in a social setting in his personal relationships with his family. The quality of his language depends on the quality of the speech he encounters in his family and on the variety of experiences he shares with them. The fortunate child hears constructive conversations, guestion and explanation in a variety of situations within the family. He listens to nursery rhymes, jingles, and favourite stories both told and read to him. He listens to and discusses carefully selected radio and television programs.

From his first babblings, attentive adults have answered him, stimulated him to make sounds and later to speak, and have offered him new words, phrases, and expressions to use. He has been given meanings and ranges of meanings for the things in his world: objects, happenings, colours, shapes, textures, and the similarities that contribute to the common generalizations of his experience, dog, fast, baby, bed, drink and car. He has been given the material from which he can select the significant features of language.

Parents, without conscious thought, teach the child effectively through repeating and expanding in a more accurate form what the child has said. Before they come to school, children continually practise and experiment with language. They play with sounds, new words, and expressions. The child's attempts to classify and organize his experiences are reflected by the development, between the ages of two and three, of the child's own linguistic structure. By the age of four, most children have mastered the basic structure of language.

The school should capitalize on the need of the child to learn more meanings, discover that all things have names, learn some of those names, and to play continually with language. This play should develop from real rather than abstract language experiences.

Most children come to school to talk and share their experiences. They will do this if those they meet in the school are ready to receive them as individuals, give them security, and reach out to them. Because of varying pre-school experiences, however, individual children vary widely in their understanding and use of language.

The teacher starts where the child is, accepting his idiom and speech patterns. The concern should be to make the child confident and willing to express himself naturally. What the child has to say and how effectively he says it precede questions of correctness.

As children play and experiment, the teacher's role is to:

. ask questions;

. offer comments and suggestions;

. give new words and expressions related to textures, qualities, shapes, and relationship;

. elicit the child's responses, accept and expand them and in this way help the child to confirm and extend his language.

Children can learn from basic experiences of handling water, sand, and materials they can mould and manipulate. The water tray can serve a variety of experiences, at several levels, from the first stages of splashing, pouring, and handling containers to the stage where the child experiments with capacity measures, with filters, water pressures, flows, and floating. Centres where children can play, experiment with and talk about magnets, water, balloons, pendulums, magnetic compasses, map-measurers, thermometer, instruments, and a variety of associated materials offer another source of interest. All these activities will lead to a variety of spoken language especially in the areas of science and mathematics.

When paint, crayons, pencils, paper, and scrap materials are available, a child will express his feelings and ideas through them. His paintings and models provide opportunities for the child to extend the range of his language as he discusses them with his peers and with adults. Such expressions provide clues to his level of understanding rather than to his skills as an artist or builder. These clues and the language the child uses in discussing his paintings show the teacher what materials to add to the classroom environment and what activities are needed to extend and enrich experience.

As children play and experiment with these materials, they use all their senses in discriminating, comparing, contrasting, and matching, and, with the teacher's guidance classifying a variety of real things, putting them in order, and finding relationships.

Comparing, contrasting, matching, and classifying real materials should lead to naming and describing and to the use of words such as big, tall, wider than, hot, rough for qualities, textures, classes, and relationships.

At a later age, the child may plan beforehand what he intends to represent in his paintings. He may wish to translate his ideas into oral and possibly written language as well. At this point the teacher helps the child to clarify, organize his ideas, and record them in print. The words and painting support one another. Still later, when the child has become more familiar and competent with printed symbols, he will write his own comments and stories.

The well told story, involving the children in response and dramatization, the nursery rhyme, and carefully selected song are all obvious means of making language come alive for the child in a dramatic, personal way. If a child has even learned the common nursery rhymes, he has an oral vocabulary and a variety of expressions extending far beyond the restricted language of the first stages of the basal reader.

Radio, film and television, carefully selected and used, can extend the child's experience and will stimulate discussions and explanations that extend the child's language. For example, Hailstones and Halibut Bones can be read to children, listened to on a tape, and enjoyed on a film.

Imaginative experiences such as imitative play, puppetry, drama and movement, stimulate a variety of languages. These activities can take place everywhere in the classroom with clay, paint, sand, and water, toys, a house-corner, and dress-up area, Display boards and curiosity centres with constantly renewed materials are another source of stimulation for spoken and written language.

People are major sources of language. An aide or a parent, besides being another pair of hands and eyes, can be another person to listen to a child, read a story, and provide the extension of vocabulary some children need. Visitors should be another source of stimulation. Children will use visitors as another resource and will extend their knowledge and experiences by seeking information through conversation, interview, and discussion.

Discussion can begin anywhere with comments on things seen outside or on trips, the texture and temperature of snow, a change in a plant, or a polywog in the classroom.

Language differs in vocabulary and expressions to suit the situations, polite, formal, or familiar, in which it is used. Children should be helped to realize in practical contexts that some ways of speech are appropriate to one situation, some to another. Children become intuitively aware that different forms of language are appropriate to imaginative play, drama, discussion in a small group, or question and aswer with teacher. The same five-year old child can range back and forth over several levels of language, from a monologue that accompanies and directs his play, to a conversation with a friend, or to the mature instruction of another child in mixing the ingredients for a simple cake.

Children and teachers need to learn the art of asking a variety of questions that provoke a number of useful answers and a continuing dialogue. This takes time. Question, explanation, discussion, guessing, and testing ideas come from observing, manipulating, and experimenting.

Language is formed and developed by interaction among people, not in a monologue by child or teacher. It is a continuous, dramatic change. Teachers may be unaware that even when they think they are giving children considerable opportunities to talk, they themselves may be talking over fifty per cent of the time. Intervention, if badly planned, may cut off the transaction between teacher and individual or group instead of keeping the dialogue open and helping it to move in a fruitful direction.

Photo - Kindergarten Child with money at classroom store buying goods

Mathematics is man to assist i and communicati

Mathematics is a creative activity through which a child acts or reacts to his environment in mathematical terms

MATHE

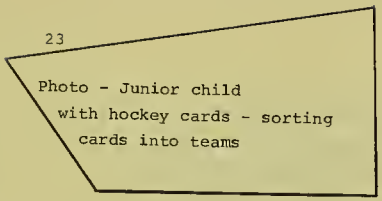
Mathematics applies to a wide range of situations in which the mind classifies and creates structures

Photo - Junior recording with pencil and paper

The vocabulary of the child's power classify and think

Photo - 8 or 9 year old children setting up a string and shoe pendulum

COMMUNICATION



an invention of
n the understanding
on of his ideas

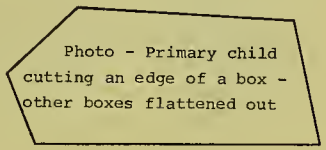
Mathematics helps a child to make sense from his world and to understand his environment

E MAT ICS

Mathematics, like language, is developed by watching, talking, imitating, listening, questioning, experimenting, and applying

Mathematics enhances to discriminate, logically

The child must find from his mathematical experiences
- excitement of pattern
- satisfaction of problem solving
- uniqueness that is developed by classifying
- expertise and power he can use when functioning with good logical processes



Mathematics and Language

The concern that mathematics must be an identifiable part of the school program, for the teacher, is legitimate. Moveover, it is important that the full extent of what constitutes mathematics be understood so that teachers and parents appreciate where, when, and how much mathematics actually is being learned.

Language develops through the need to talk about the categories of things that are important such as food, people, bed, toy; 'mathematical language' is required to describe different categories such as shape, pattern, and relationship which a child finds in his active play and observation. His early vocabulary includes words such as hot, under, round, gone, fast, out, many, more. These describe physical characteristics of objects, position, and relationships between things which are necessary to the development of intellectual processes in general and mathematics in particular.

Mathematical language of words and symbols develops from other aspects of language and involves briefer and more precise expressions. No opportunity should be missed to enrich the child's vocabulary with regard to colour, texture, form, and feelings. All of these extend his power to discriminate and to classify as well as to communicate effectively. He learns to distinguish the qualities that belong to some objects and not to others by verbalizing his own perceptions, by listening to others, and through discussion. He extends old meanings and finds new ones. For example, 'animal' is first used for a wide and general class. Later dogs, cats, rabbits, gerbils, fish, hampsters, are special types within the notion of 'animal'. As discrimination grows spaniels, collies, retrievers, hounds, are further refinements under 'dog'.

As the child uses more precise words and symbols, they enable him to organize, to condense and to transfer his understandings. Only when the child has achieved basic skill in classifying, ordering, partitioning, and matching, and is able to communicate his understanding, will he be able to undertake the study of number concepts and operations.

The following diagram illustrates one way teachers may use experiences to develop both language and mathematics in an integrated fashion.

Possible Language Activity		Possible Mathematical Activity
Use by adults and children of language which names, describes, questions, and explains items collected during the walk	Photograph -- Group of 5 - 6 year old children: A walk in the woods.	Classification of items collected and comparison shapes, sizes; discussion of distances;
Discussion to discover what constitutes a good breakfast. Planning the menu.	Photograph -- Group of 7 - 8 year old children: Study of breakfast cereals.	Shapes of containers - comparison of the amount of cereal contained within boxes of the same dimensions: weight and capacity.
Planning a rink. Discussion of site, ways to build rink, etc.	Photograph -- Group of 9 - 10 year olds: Planning and building the school skating rink.	A scale model is planned and built before real construction starts. What materials, dimensions, shape? Experiments making ice.
Chart of special words associated with the game of cribbage; interviews with experts.	Photograph -- Group of 11 - 12 year olds:. Study of games people play	A study of 'fifteen-ness' as children play cribbage. Mathematical aspects of other games.

Mathematics and Representation

The child develops by using symbols such as toys, pictures and words to represent his ideas and feelings. Representing ideas by symbols is a powerful instrument in the development of thinking. This will be even more evident when mathematical symbols are introduced at a later stage.

Speech is the child's way of communicating his ideas and his perceptions. Simple forms of classifying can be carried out independently of language. But language is necessary for the more complex classifications; words clarify and focus attention on the category. When a child can use words or describe succinctly a collection of things, a connection between two things, or a pattern of action, he is no longer restricted to images or objects as the tools for his thinking.

Play is acknowledged as a vital aspect of children's learning. It is a situation in which the child can operate without penalties, trying out variations and possibilities both in reality and in fantasy. Many new learning situations require a period of play and may be purely exploratory and manipulative before the child begins to investigate in a systematic way. In this period of imaginative play the child represents and acts out experiences which are important to him. Given blocks, boxes, hoops, glue, string, tape, hammer and nails, he will make things which for him represent a house, a car, a garage, a bridge or a snowmobile. There is value in using structural material to introduce basic ideas such as counting, measuring, classification and number bases. In order to exploit fully the potential of these materials, children need opportunities to play with them and explore their possibilities. Through symbolizing in this way, the child extends his understanding of how they behave and he can influence them.

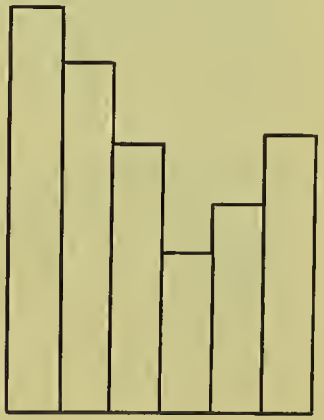
Models and drawings are particularly useful in revealing how a child sees his world. These representations are not exact or photographic. Their structure corresponds to the mental image he has formed. The development of these representations shows clearly how his awareness of connections between things and their relationship to him emerge. A child of four may show a hat above the head not on the head because he has not yet seen the relationship of fitting the hat to a part of the head. Children who have had plenty of opportunities to build and talk about models move more quickly to drawings and plans that are more precise in relative position and scale than are children who have not had these experiences.

Representation through speech, play, models and drawings are the forms of communication with others. Discussion helps children to discover the contradictions and lack of accuracy in their models, pictures, sketches and descriptions. The observation and discussion reveals to the teacher the stage of development of each child and provides clues for planning subsequent activities.

Graphs and maps are major forms of recording and representing information. The development of graphs goes hand in hand with the growth of ideas in mathematics. There is steady growth from the crude comparisons of the first block graph at age five or six to the sophisticated relationships between two or even three variables in the Senior Division. Graphical representation is a dynamic activity; it often starts with familiar material and then spins off into activities and investigations that could not have been foreseen. Because one kind of situation has been graphed effectively once it should not always be graphed. The choice of representation is in itself a mathematical exercise.

A graph should not be restricted to the conventional usage of squared paper with rectangular axes. For children it has much in common with classification and map-making, as is illustrated in the following sequence.

The following examples in the development of graphical representation emphasize the activities of sorting and matching, comparison and ordering, estimation and approximation, and a search for pattern that is important at all stages.



STAGES IN DEVELOPMENT OF BAR GRAPHS

The following are only samples:

Activities and Vocabulary	Mathematical Ideas
Stage A	
1. Colours of mitts worn by children: black, brown, white, red, etc. Mitts placed in appropriate hoop or loops of rope.	No framework or baseline. Recording with real objects - unequal units. Comparison by eye.
2. Our favourite colours. Pictures of children drawn, cut out and placed on sheet of appropriate colour or on a plain sheet labelled red, green, etc. Which is most popular? Which colour is liked least?	Unequal units.
3. Hair colour of children. What shall we do so that our heads are the same size in our picture? (Draw round the same tin - or use identical cubes or heads of appropriate colours). Which colour of hair have most children? Least children?	Focus attention on equal units. Comparison.
4. Favourite fruits - mapping of children's name to favourite fruits.	One-to-one mapping. (This leads to tabular form later).

Activities and Vocabulary	Mathematical Ideas
Stage B	
1. Traffic or bird count using interlocking cubes piled one on top of the other.	Baseline emphasized. Need for identical units and for units to be touching emerges from discussion on comparison.
2. Pets kept by children. Identical sheets of paper used for drawings. How can we find the most popular pet without counting?	Framework drawn on squared paper with horizontal axis prepared by children after discussion. Spaces below each column are labelled. Vertical axis is not drawn. If the count is large children can draw horizontal lines at intervals of 5 or 10 units.
Stage C	
Introduction to block graphs using larger numbers.	
1. Traffic count for longer period.	When the count is a large one it is convenient to label the vertical axis.
2. Number of children in families in the whole class.	Lines and not spaces should be labelled. (Why?)
	Spaces on horizontal axis should be labelled.
3. Shoe size in a class, and in year group.	A continuous strip can be used to represent the count or frequency.

Activities and Vocabulary	Mathematical Ideas
GRAPHS WHICH MAKE THEMSELVES	
1. Cut strips, each in different colours to represent the actual lengths of your waist, neck, wrist and ankle.	Matching from a baseline. Putting in order from smallest to largest.
In your group of four friends, is the order the same for each measure?	
Make a 1/2 scale, 1/4 scale, 3/4 scale model of these measures.	Scale. Fractions.
2. Draw (at suitable intervals) the shadows of i. a vertical post	Idea of continuity.
ii. a brick	Greatest and least values.
throughout the day.	Recognition of congruent shapes.
What happens in-between recordings? at dawn? at sunset? When are the lengths the same? When are the shortest (longest) shadow? Can you estimate an in-between point? When are the shadows of the brick identical (congruent)? Describe them.	
3. Arrange a set of identical elastic bands on a set of equally spaced nails in a horizontal line. Faster identical metal washers on the bands; one on the first, two on the second, three on the	Direct proportion - straight line "graph".

Activities and Vocabulary	Mathematical Ideas
third, etc. What do you notice? When does this break down?	
4. Match the diameters and circumferences of a set of circular tin lids with thin ribbon or paper, in matching colours.	Matching.
Compare corresponding diameters and circumferences. What do you discover?	Comparison by division.
Try smaller circles and larger ones. Is the relation always true?	

Mathematics and Notation

Children see numerals long before they understand their meaning. It is only after many first-hand experiences with classifying and ordering related to numbers that they extend their knowledge to a system of notation. Notation is a means of representing numbers so that they can be carried in the mind as well as written on paper. In order to write numbers greater than nine, the important operation of grouping must be undertaken. This assumes the common practice of introducing sets of ten first, because we use ten as the counting set or base in our numeration. Notations based on other counting sets have their uses and children should have opportunities of organizing numbers by means of groupings other than groups of ten. The experience of using a variety of bases helps children to generalize the structure which is common to all systems using the Hindu-Arabic system of digits 0, 1, 2, 3, ...

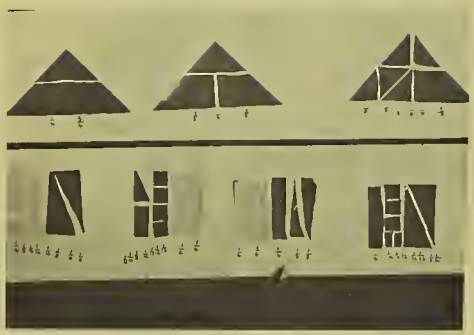
When a child can think of numbers without needing actual objects to guide his thinking, he is ready to record the operations of addition and subtraction using written symbols. If the development of a notational scheme has been successful, the child will have little difficulty in carrying out additions and subtractions that require regrouping. Structural apparatus and diagrams help children to become aware of the relation between the values represented by neighbouring columns. The way is now open to further grouping without limit. The realization that counting can never reach an end is a startling and memorable experience for most children. The very large numbers required in space travel or population counts and the very small numbers used in modern physics have given rise to a more concise means of symbolizing numbers and operations. Scientific notation is well within the grasp of children in the Junior Division.

The standard way of writing fractions is by means of a pair of numbers separated by a horizontal line $\frac{3}{5}$. This arrangements helps to distinguish the denominator, which names the parts, from the numerator which tells how many. Early experiences with fractions must emphasize equivalence in a variety of activities. As the child's understanding of equivalent fractions becomes confirmed through extensive use of concrete materials, his ability to deal with the operations, without using tricks, becomes established. Teachers must ensure that the fractions being used are simple and realistic. Decimals are another extension of our notation. As a result

of their use of money, children have considerable experience in using decimals before they meet this notation. They can easily grasp the idea that any fraction can be expressed as a decimal by dividing the numerator by the denominator. For example, $\frac{7}{8} = 0.875$. As Canada moves toward the use of metric measurement, opportunities for practical use of decimals will increase. The operations of addition, subtraction, multiplication and division are performed better by children who understand place value.

Children, after suitable experiences with concrete and practical situations, will begin to use simple algebraic notations. Similarly, they will develop schemes for labelling geometric ideas such as angle, parallel and co-ordinate.

A close association of all symbols with real situations will help to eliminate unrealistic calculations as well as the imposition of inappropriate adult concepts and interpretations.



Mathematics and Computation

With the advent of 20th century technology and its wide range of computing devices, the social pressures for speed and accuracy in calculations as a job qualification have been substantially reduced. This does not mean that children no longer learn to understand and use the skills of computation. As evidence is compiled on how children learn, it is possible to put these skills in a more rational framework. The ability to deal effectively with numerical relationships is dependent upon the development of certain mental structures within the child and not upon the build-up of memorized 'facts'. In most cases, the child's understanding of twelve is better achieved through the mental organization of many experiences of 'twelveness' which stress the conservation of 'twelveness' and not necessarily on the logical but imposed exercises of learning number combinations from 1 to 10 and the extentions to 20.

We now recognize the need for experience. History tells us that man learned by physical experience and then went on to symbolize his understanding. The 'four rules of number' were originally manual operations carried out on an abacus. Of course, the mathematical idea does not reside in the materials but in the abstraction of the actions undertaken with the materials. These actions can be very simple. Moving a finger up a number ladder or pushing two groups of counters together contain the idea of addition. As a result of many experiences of this nature, children attach meaning to the words 'add' or 'plus' and usefully employ the mathematical symbol '+'.

The build-up towards memorization of number facts is a gradual process utilizing carefully planned activities with number from practical situations such as measuring, use of money, and time. By about 9 years of age many children will have "memorized the tables" as the outcome of many experiences of a practical nature and practice. Other children will need more practice; still others will find great difficulty in committing facts to memory. The reason for 'memorization' is to have the information readily available when needed. If the time and effort required to memorize is unrealistic or if the ability to memorize is beyond the reach of the child, the facts are not easily accessible. These children can construct and use tables that organize this information for themselves.

It is important that each child learn to search for the patterns that reduce the number of facts to be memorized. For example, if they discover and understand the property of commutativity, addition and multiplication facts are more than halved.

The number 9 has a special appeal to children when they see that the sum of digits of the multiples of 9 is also 9. For example, 9 x 77 = 693; the sum of the digits is 18; a number whose digit sum is 9. Even slower children will readily acknowledge that 6 x 9 cannot be 56.

The most reasonable way to determine whether or not children know these number facts is to ask them orally. Written tests cannot identify children who are merely counting on. Similarly, there is little use in written practice using tens and units until children can explain orally how to add such numbers as 57 and 26.

A major concern of the teacher is to know:

- when a child is ready to memorize number facts;

- when a child is ready to attempt written calculations;

- when a child needs practice and how much.

It is essential that the many variables that influence decisions of this kind be considered.

Written practice is important but serious consideration must be given to the development of the following skills before such practice can be profitable.

1. Addition and subtraction facts to 10.

2. Addition and subtraction of both 1 and 2 to any number to 20.

3. Addition of 10 to numbers from 1 to 10.

4. Addition of 9 to numbers from 1 to 10.

5. Doubling and halving numbers up to 20.

6. Near doubles up to 9 + 8 giving two reasons such as 2 x 8 + 1 or 2 x 9 - 1.

7. Addition and subtraction of numbers in the range of 20 to 100 from patterns. The use of a number line to 100 and strips from 1 to 10 units long is important in developing understanding of 5 + 9, 15 + 9, 25 + 9, 75 + 9 and so on.

8. Multiply any number by 10 and 100. Division by 10.

9. Multiply and divide by 3 up to 3 x 12 and 36 ÷ 3.

10. Know the square of numbers up to 10.

11. Other tables can be obtained from the above except for 9 which can be developed from the characteristics of the multiples of 9.

There will be many 10 and 11-year olds who will know all the addition, subtraction, multiplication and division facts by immediate recall. A majority will have reached a standard of quick recall. This means that failure to remember certain facts such as 9 x 6 can be overcome by recalling 10 x 6 and subtracting 6. About one child in ten will demonstrate serious difficulty remembering. They should use the addition and multiplication matrices which they have made for themselves.

Other considerations that influence decisions on the timing and type of practice in computation are:

- children should not write out calculations which they can do mentally except in communicating solutions to problems;

- the algorithm used should be appropriate to the level of understanding achieved by the child;

- every child needs to reach an efficient method for each of the four operations. To achieve this he will need practice at intervals that may range from daily to weekly to monthly. This practice should employ various strategies such as games and competitions with individuals and small groups;

- poorly chosen overpractice can often be more harmful than too little, as it can lead to boredom and dislike of mathematics.

Expectations in Mathematics

The following is a list of reasonable expectations for the Primary and Junior Divisions.

Each child would be expected to:

. understand the main ways in which numbers are used;

. understand mathematical relationships such as, equal greater, congruent, parallel, etc.;

. be efficient and informed in computational processes;

. have been involved in the measurement of time, area, perimeter, volume, distance, as related to needs identified in experience;

. investigate and appreciate some of the major practical roles of mathematics;

. be able to use estimates and approximations effectively;

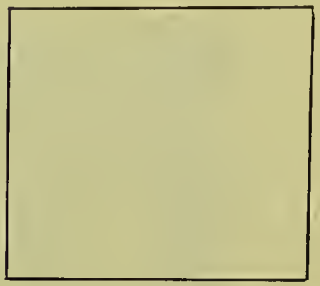
. have used simple examples involving variables;

. have gained some insight into correspondence, mapping, and symmetry;

. have explored simple examples of probability and statistics;

. appreciate the relationships involved in shape -- both in space and in the plane;

. be proficient in making and interpreting graphs, charts, models, diagrams, and other forms of representation.



Measurement

Measurement represents a significant part of applied artithmetic. It serves as a connecting link between our physical world and mathematics. The child's experience with measuring helps make the introduction of new mathematical processes interesting and relevant. Environmental Studies and The Arts include a great many activities that are truly mathematical. Mathematics permeates most areas of experience.

The study of measurement can be conveniently separated into five stages:

(a) Concept of Magnitude of Measurement

This includes the development of an intuitive awareness of order in various kinds of measurement. Long, longer, longest; short, shorter, shortest; hot, hotter, hottest; and similar terms comprise the introductory elements of measurement.

Because the importance of operational knowledge has already been stressed, it is useful to consider what children learn while playing and using toys and other materials in their environment. During these experiences the child sees, hears, and feels to discover and remember different qualities for later reference. When words are available, these qualities become abstracted.

The concepts of length (or "longness"); of area (or "surfaces covered with paint on paper); capacity (or"holding so much water"); volume (or "the amount of space inside a box") must become the first intuitive notions of measurement.

For example, children might be given a series of cans and containers having different dimensions and shapes and be asked to place them in order depending on which would hold the least amount of water and which the greatest. The seriation of capacities is done without any reference to numerical measures. The purpose is merely to teach an intuitive awareness of the difference in magnitudes of various volumes. Similar activities may be done with lengths, areas, masses, times and forces. (Forces may be compared by stretched elastic bands)

(b) Arbitrary Units

The next stage involves the choice of an arbitrary unit. From the beginning of his school experience, the child must have opportunities to develop more appropriate and more precise referents. His understanding of the quality of length, and other dimensions, is extended from visual or body comparisons to the use of a unit that has the same nature as the thing to be measured.

For example, once a child can place lengths or areas in order of increasing size, the next concept that arises is how much greater is each object than the one which is next smaller? For instance, how much more water does the second container hold than the first? Here the children choose an arbitrary container such as a baby food tin or plastic vial to find the size of the various containers.

(c) Standard Units

Soon the children realize the need for a standard unit. Group experiences in the classroom and elsewhere make it necessary to compare results and communicate with others.

As Canada moves towards the use of metric standards of measurement, teachers should introduce the metric system as the primary form of measurement. No attempt should be made to convert from Imperial units to metric or vice versa. It may be necessary for a time to refer to both systems, but this need should become less as the conversion to metric units becomes established.

(d) Measurement Scales

The need for a scale arise naturally. As a consequence of many experiences in measuring both with arbitrary and standard units, the child discovers the convenience of using a scale. Instead of using a model of the unit over and over again to compare lengths or masses, he can prepare a number line based on the selected unit.

For example, the idea of a scale can readily be used in measuring volumes by having the students calibrate a large plastic jug. This could then become a standard measuring device with a scale marked on masking tape on the outside.

(e) Competence in Measurement

In the final stages of measurement children should have a feel for the standard units with which they must work. They should not only know the relationship between metres, centimetres and millimetres, and between other related units, but should be able to estimate distances, volumes and masses with some measure of success. There should be numerous opportunities for children to see and feel measurable quantities, to estimate their sizes and then to check their guesses by actual measurement.

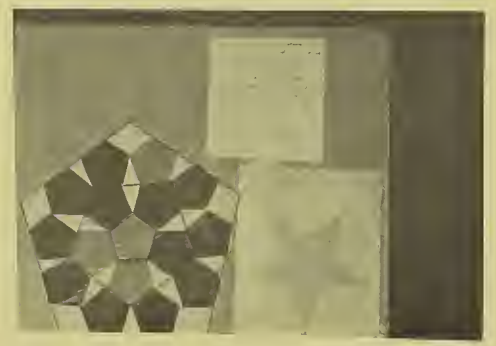
Geometry

Geometry is the natural language of of spatial concepts and space relationships in the real world. Space is a basic human experience with which every child of every age has to come to terms.

Infants learn about shapes through the eyes, the hands, the tongue, and the lips. As they start to move about they build up the larger space of distance, direction and elevation. The first spatial words such as up, down, over, under, have a quality of movement that is significant. The early years in school are vital in stimulating inquiry and experiment and making possible the discovery of new spatial relationships and the development of new motor skills in relation to them.

The majority of objects that children see are adaptations of solid shapes. They see food containers that are cubes, cylinders or cuboids; they see roofs that are shaped like prisms and pyramids. As children handle and observe various solids they become aware of their properties. With experience and encouragement they will attempt to classify these in various ways. This can lead naturally to the use of such terms as cone, cylinder, sphere, cube, cuboid, prism and pyramid.

Plane figures are first seen as the faces of simple solids and then displayed as tracings or drawings in the plane. In the next stages a study of the various regular polygons precedes the study of their associated solids. There are many devices, including geo-boards, dot paper, templates, and models that encourage children to actively test and investigate ideas of convexity, interior and exterior, the relations between the number of intersections of lines joining points, and the number of points, the number of line segments and regions and some simple properties of symmetry.



When linear measurement has been introduced, the construction of figures from line segments of given length can be done. Accuracy need not be high and should not be demanded in order to illustrate the uniqueness (in drawing) and rigidity (with models) of the triangle and the lack of uniqueness of all other plane figures if only the lengths of the sides are given. Closely associated with this is the question of how many line segments are needed for a unique construction of a polygon, both in drawing and in model-making. The decomposition of polygons into triangles follows as a natural consequence as does the congruency of figures. This then leads to a consideration of similar problems in three dimensions.

In the Junior Division, ideas of point line, plane, and angle, and their relations as sets of points in space may be introduced and developed. This development, however, does not imply full definitions. The idea of angle and of its measurement deserves very careful treatment.

Once angle and area are introduced, the new concepts of similarity and equivalence can be studied. Similarity can be examined from models in three dimensions and drawings in two dimensions using measurement to discover the essential equalities; congruence reappears as a special case. Similarity extends into scale drawings and, at a later stage, to elementary surveying.

Extensions from the plane polygons, especially triangles, to the corresponding figures on spheres, cylinders, and other surfaces should be made in conjunction with the use of a globe and maps. Projective properties introduced during the study of similarity can be extended to include projections on surfaces other than planes.

In the later years of the Junior Division children will be introduced to cartesian co-ordinates in the plane from the use of graphs. The geometric associations should be emphasized. In this study and in the study of symmetries and patterns, the use of the three operations of translation (slide), rotation (turn), and reflection (flip) in the plane should be emphasized. These are particularly useful during the study of congruence and parallelism.

It is now useful to refine the concept of point, line, plane, and angle to a more precise level. More of the properties of individual geometric figures in two and three dimensions are discovered through measurement and construction. Past emphasis, however, on many 'compasses and straight-edge' constructions should be reduced and replaced by the methods used in draughting such as parallel rulers, set squares and so on.

In all the work connected with geometry there should be extensive use of models, the construction of models and drawing of figures.

LISTENING AND SPEAKING

Listening and speaking are basic to other dimensions of communication. Their development, therefore, should be considered as important a part of the language program as reading and writing.

Speech is an expression of self and serves as the link between people. Therefore, it is the school's responsibility to create an atmosphere where a child will be encouraged to express his ideas and feelings, where he will find new interests and experiences to talk about, and where he can continue the process begun in infancy - the expansion of his vocabulary and the extension of his facility in speaking.

Language experience begins in listening and the capacity to listen and to interpret language influences one's ability to speak. When a child speaks he needs an audience, a listener to complete the interaction and to respond to his ideas. Within most social groups there is no division between listening and speaking, between question and answer, between anecdote and response; they are completely dependent on one another. It is, therefore, only to make discussion easier that they are separated in this document.

Listening

Listening is more than hearing. It requires a sensitivity to significant sound, in particular the human voice. It requires the discrimination, interpretation, and response to all sounds in the environment.

Even though most children have learned to listen and understand sounds before coming to school, some children fail to listen because of the continuous bombardment of unorganized sound, noise, and speech in their environment. The school's task is to help children to listen with interest and selectivity, so that they may extend the range of what they hear. This does not suggest specific periods for listening, but rather an environment in which there are many opportunities to explore a variety of sound and speech activities such as those listed below.

All children require many opportunities to hear, compare, contrast, classify, and discuss a rich variety of sounds. This might include individual and group exploration and experimentation with sounds. For example, if children walk around the school or journey to and from school with a tape recorder they can record a variety of sounds. The sequence in which they are recorded produces a "sound story" which children can interpret and to which they can respond. Older children enjoy producing their own "sound stories", using recorded sounds from the environment first and then creating their own sound effects and coupling them with an imaginative script. Exploration with sound might include the following:

Natural Sounds	heart beat, bird calls, wind, water, thunder, animal sounds.
Man-Made	machines: engines, typewriters, lawn mowers, bells, horns, sirens, traffic noises, snow machines, airplanes, fog horns.
Music	percussion, music with marked rhythms for young children; fast-slow, soft-loud, differing in pitch, timbre, key linked with instruments, percussion, rhythmic words and song, singing, experimenting with music. (Carl Orff instruments, Kodaly voice and singing).
Sounds in the Classroom	near school, in the home, reverberations and echoes, near, far, located in space.

Speech Sounds	song, nursery rhymes, stories, rhymes and jingles; responding to and translating rhythm into other media; finding patterns and similarity of sound; responding to different voices and identifying pitch, speed, quality, origin of voice.
Classifying	using ideas such as soft-loud, harsh-soft, patterned-random, high-low, continuous-repetitive, staccato.
Producing and changing	sound pitch rhythm timbre texture
With	natural objects bottles struck or blown over pitch-pipes whistles wires of various lengths stretched over hollow surface or sound board instruments - drum, guitar, piano.

When children play with the rhythms of words and develop sound patterns with percussion instruments, they link together speech and sound. Just as children can be made aware of the rich variety of colour in their world if given the materials and experience, so they can become aware of the variety of quality and texture in sound, and the subtlety of words needed to describe these aspects. Experimenting with sound gives opportunities not only for creativity in both music and art, but for classifying, comparing, finding relationships, and drawing graphs of kinds of sound.

Simple scrap materials combined with musical instruments provide excellent opportunities for children to experiment with producing and changing musical sounds and textures according to pitch, rhythm, and timbre.

Experiences with Literature.

To encourage and maintain listening, children must experience music, verse, and prose to help them to:

- discriminate;
- enjoy;
- relate more effectively with themselves and other people;
- enrich and extend their imagination.

Literature, both prose and poetry, should be a part of the school experience that children can carry over to other contexts. Regular reading aloud to children of all ages by the teacher and librarian from a variety of books (factual, fairy tales, folk tales, myths) is an important contribution to listening, literacy, and imagination. Carefully chosen stories and poetry will expose children to language that is used artistically with skill and beauty and will help them explore and interpret human experience, feelings, and values. Through literature children explore situations that supplement and extend their own experiences. They learn more about themselves through literature with which they can identify and expand the world of imagination.

Reading effectively to children is a dramatic experience which should bring out the richness and variety of meanings in dialogue and description. Children respond to a well-told story and, therefore, teachers must make their favourite stories "their own" in order to free themselves from the book and provide a face-to-face communication.

At times, reading aloud may be followed by activities that will help children re-live the story. Their experiences might involve expressive activity which encourages interpretation through other forms of communication; in movement, drama, puppetry, painting and playing with the rhythm and sound of interesting words, phrases, and dialogue.

Listening Centres

Multiple outlets for record players and tape recorders enable individuals and small groups to listen. The activities selected for the listening centres should include opportunities for:

(i) Listening for enjoyment:

- a favourite story, record or tape selected for quality of presentation;
- stories and poems written by children in the class;

(ii) Listening for information:

- factual material related to on-going interests taped by more capable readers for children who cannot read well enough to find the information they require;
- filmstrips and slides with a taped story or information;
- reports, interviews and descriptions of experiences taped by the students in the class to clarify, reinforce, and aid recall of information;

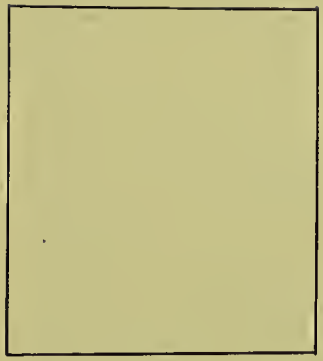
(iii) Listening for practice and reinforcement:

- commercial or teacher-prepared tapes that provide brief intensive practice with sounds, spelling, or second language. These activities aid in discrimination and offer opportunities for practice in listening for more specific directions and detail.

The Teacher

The teacher can contribute much to the way children learn to listen and interpret by:

- learning to listen to himself;
- listening more than he talks in class;
- becoming sensitive to the nuances of meaning and feeling in children's speech and questions;
- accepting and working on the fact that children normally understand better than they can express themselves orally, even in their mother tongue, and that understanding is not always a matter of giving an answer;



- finding out whether anything in the situation, materials, or way of presentation may have confused the child;
- using the child's own forms of oral expression and expanding and improving a child's expression without penalty;
- discussing with children alternative and better ways of expressing ideas and feelings.

Listening is concerned with interpretation; it cannot be passive. In real life situations, it is the imaginative listener who can listen to a story, a news broadcast, or a speaker, and interpret and understand what lies behind the words. The child can learn to do the same. He should understand, and appreciate dialects, envisage the situations related, share the humour or pathos and evaluate the information he receives. The listening provided for children should relate to the living environment and include encounters with real people from all walks of life. Television and films play an important role today. If children are to listen selectively and critically, therefore, favourite programs, documentaries, interviews, and news broadcasts should be discussed.

Speaking

In order to develop their powers of language, children must be given countless opportunities to use language orally. The culture of the later 20th century is dominated by oral discussion, argument, debate, interview, persuasion at the personal level and through the media.

The ability to speak fluently and confidently is closely related to a child's self-concept. The teacher, therefore, should create situations where the child has many opportunities to speak in an atmosphere that fosters acceptance, encouragement, and guidance.

Free, spontaneous interchange among children will provide the teacher with opportunities to listen, respond, and to identify the particular needs of the children he teaches. Such informal speech is stimulated in a variety of situations. It will change to suit the situation and the maturity and needs of the speakers involved. A collection of artifacts or a new hamster will generate questions more relevant to children than those posed under artificial situations in workbooks. Verbal reasoning and problem-solving are evident when a child is thinking aloud or sharing with a friend the problem of building a helicopter or making a model. Watching a baby duckling struggling to emerge from his shell produces the poetic language of emotion and wonder. A youngster's return from a trip to another part of the country will prompt questions,

explanations, descriptions, and reports. A penalty called by a referee of a hockey or soccer game will produce the language of argument, persuasion, explanation, and excitement.

It is such informal and spontaneous situations rather than staged conversations, language lessons, and "sharing time" that can, through careful and constructive guidance on the part of the teacher, help children to become more articulate.

The tape recorder, if used with discretion, is also an excellent instrument for helping children improve their own speech expression. Tape recorders will record the speech of children in varied circumstances and it can be analysed by the children. Reading personal stories and poems, telling stories, describing experiences, reporting, giving directions for a game, dictating a recipe, giving a news report or a sports cast, are all speech activities that children should record and replay for themselves and for any friends they choose to invite. When children recognize the need for help through hearing themselves the teacher is usually their prime resource for assistance in refining their expression.

Children normally talk spontaneously and come to school with a keen interest in words and

an eagerness to share their interests and experiences. To continue the process of developing fluency and precision in language, they must be able to experiment, practise, and play with words. Their curiosity, wonder, speculation, conceptualization, and imagination must be nourished through real and exciting experiences. Their discoveries and interests need to be discussed, re-created in a variety of ways, and shared with a teacher, a small group, and at times with the whole class.

Since speech is learned through the ear children must hear and feel language that will enrich and extend their lives.

The teacher's speech and how he uses it penetrates every aspect of school life. His speech influences his relationship with the children and will control the general emotional atmosphere of the classroom. It is important for the teacher's speech to serve as a link through which the children can know him as a person through:

. sharing personal experiences;

. sharing favourite collections, books, poetry, and music;

. individual conversations with each child;

. selecting books, poetry, and music of high quality to share with the children daily;

. helping children to feel poetry, music, and literature by taking time to re-live and play with the words, expressions and ideas presented.

In a vital language program children grow in their understanding of the significance of speech and how it works. They must explore the living language of real people in real life situations.

For example, a telephone can be used in a variety of ways, at different ages, to emphasize the importance of speech. Inarticulate children are liberated through the impersonal medium. Two telephones are particularly useful and speech will improve tremendously if there is someone on the other end of the imaginary or perhaps real line. The telephone will provide the children with opportunities to converse, ask for information, make appointments, interview, and formulate their own rules for its effective use.

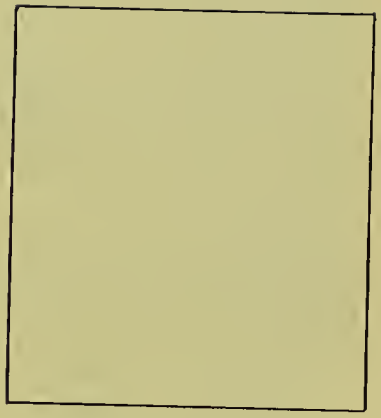
Television and radio have a powerful impact on children of all ages. Younger children can be helped to become more selective if programs are discussed and shared. Older children can explore the media to analyse and evaluate the language used in interview, comedy, documentaries, and drama.

As occasion arises, there can be discussion on what advertising tries to do through the use of music, song, jingle, slogan, and emotive or dramatic implication. This can begin to form an intelligent and sceptical interest in the power and techniques of the hidden persuaders.

Given equipment and guidance, children, by the end of the Junior Division, can handle a simple television program of their own. To make a set of slides for a particular project, a simple movie or a videotape, children must discuss material, story, and script, planning the actions and interviews and the shooting of the film. Children profit from experiences which many adults lack: the ability to translate from verbal to visual forms of communication.

Young children are capable of interviewing staff and visitors in order to produce a "book of friends", a sometimes candid description of the persons they have talked to. Older children can run a class or school newspaper or radio station, in which they give items of current interest, requiring interviews, surveys, and descriptions of "personalities".

Older children can be helped to understand the many ways in which the language of the early settlers and native Canadians have influenced their



community by asking senior citizens about their childhood experiences. They can become aware of the fact that language changes as new discoveries in science and technology are introduced.

Formal rules of speech and discussion acquire meaning for children in the Junior Division as an outgrowth of visits in the community where they have seen committees or courts at work. Such visits can lead naturally to debates, formal discussions, and role-playing in school.

Situations of this sort can be useful occasions for discussion of roles, behaviour, and community living. They can lead to an examination of values in the child's own terms. Swearing, being honest, breaking rules, telling the truth, stealing, being loyal to friends, and why matters should or should not be, can be usefully discussed.

The importance of language in human relations can be developed through role-playing, mime, movement, drama, and puppetry. A dress-up trunk, a full length mirror, and a house corner with very few props is all that young children require to assume the roles of people in their real world, the world of TV, or the world of fantasy. In this setting they explore the personality of others by identifying with them and expressing the speech patterns and emotions that suit their chosen characters.

Older children are social beings and extremely interested in problems of relating to their peers. Role-playing will help children of the Junior Division work out solutions for such social problems. Creative play completely designed by the children and based on problems set by themselves may take the form of interviews, panels, skits, commercials, debates, monologues, and impersonations.

Playing and experimenting with words, speech sounds, and nonsense syllables are activities which children of all ages enjoy. Young children spontaneously and naturally imitate and create sounds to accompany their imitative play. They memorize and take great delight in repeating jingles, nursery rhymes, and choruses from their favourite stories.

Older children enjoy blending and mixing speech sounds and nonsense syllables to:

. create moods (mystery, joy);

. express emotions (fear, rage);

. name the strange creatures they create in junk materials, clay, or papier maché;

. create sound effects as background for choral speaking, story telling, oral reading, movement, and drama;

. experiment with the variations in expressing meaning by changing the pitch, texture, and rhythm of the voice.

It is through informal speech rather than formalized lessons that children gain in fluency and articulation. An interest in words is encouraged further by a teacher who is himself a language sleuth and shares his discoveries with his class.

A good model of speech is a more effective way of getting good spoken language than direct correction and rule-giving. In dialogue with children, the teacher's responsibility is to:

. listen and assess;

. anticipate by suggesting a new word or a re-formulation;

. refer a question or explanation back to individual or group;

. extend children's understandings by moving them at their own pace from the specific to the general, from the concrete or immediate sensory experience to the communication of the experience;

. relate one experience to another, extending the idea of pattern and classification;

. bring out of experience and language the ideas of relationship and meaning, emotional as well as factual, and their validity in terms of the child's concerns.

Oral work should continue to hold a prominent position throughout the Primary and Junior Divisions even when children can read and write. Any program that keeps children working in isolation should be reviewed critically.

Some children enter school with immaturities of speech such as lisping or poor articulation. In general, these are developmental lags that will become less significant with age and appropriate language experiences; some of these children, however, will continue to experience difficulties. The teacher should give special consideration to these children, observing and gathering information on possible physical, social, or emotional factors so that their needs may be met. He can do this, not by attempting therapy or speech exercises, but by selecting and emphasizing items from general language experience. He may need to stress certain sound groups or sound sequences so that the child is helped to discriminate and use the desired words, syllables, or expressions in the context of his own experience. Interesting rhymes and rhythmic material, songs and verses may also be useful for the child. Articulation is known to be related to speech perception; the child with poor articulation or poor discrimination of speech is likely, therefore, to have difficulties in reading, as he tries to match his confused or distorted perceptions of words to the printed image. Special attention should be given to these children.

The hearing-handicapped child who suffers from an educationally significant degree of hearing loss also needs special provision. This disability is crucial in the early stages of language learning. Most teachers will sooner or later encounter children with sufficient hearing loss, possibly not diagnosed, to make it difficult for them to discriminate speech clearly in the general noise of the classroom. These children may show their difficulties in shyness, lack of confidence, misbehaviour, errors in understanding or, even more specifically, in difficulties in the early stages of reading such as the confusion of sounds.

The effects of speech therapy can be enhanced by sensitive, careful individual follow-up by the teacher in the general program.

Children who come to school speaking a language other than English can be at a serious disadvantage which can stay with them for several years if they do not receive special help. The considerations that apply to learning a second language are discussed later.

Interesting research available
today tendency to go from mother
tongue to second language period

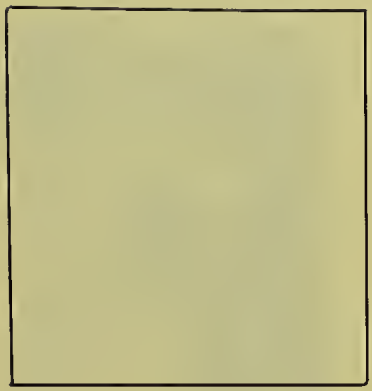
Puppets

The use of puppets can contribute to many aspects of the school program but especially in helping children further their competence in speaking.

Through puppets, the child can be helped to work out his emotions, desires, and fantasies. Often a child may speak through the mouth of a puppet when he is too shy or disturbed to express his feelings and ideas directly.

Young children, however, need guidance in using puppets if play is to be more than episodic and unconstructive. If simple training in manipulation is given, actions of puppets can become as expressive as voices in communicating emotions and situations.

The young child in the Primary Division also needs help in order to use puppets in a creative way without restricting his imagination. Children can then be encouraged to speak "through" their puppets and begin to interact with other children, using a glove puppet as an extension of themselves. The teacher can suggest how the different puppets which children hold can take familiar characters, such as mother, father, teacher, or the family pet, so that children can link their puppet play with familiar roles.



At the beginning, the children will play in parallel, rather than interact, but as children become more mature and adept, the play will become longer and less fragmentary. Puppetry can then develop into a variety of dramatic situations which arise in the children's experience, from a story or a poem, or stimulated by a play or story on television.

Later, probably in the Junior Division, children will be ready to use puppetry to develop fully literary and historical situations. After the initial instruction, puppetry can grow to involve larger groups of children and can draw in others for activities concerned with preparing sets, making puppets, preparing scripts, producing sound and light effects, and the like. Puppetry can, in fact, be a most valuable activity throughout the primary and junior age range. Even a simple puppet play can introduce the art and the theatre with a minimum of time, space, and expense.

READING AND WRITING

Reading and writing are rooted in speech but are not simply "talk written down". They lack the supplementary expressive cues of gesture, facial expression, and the variations in rhythm, intonation, and stress which a speaker uses to express his ideas. The printed word represents an organized premeditated "message" - (ideas pass through a shaping process before they are written) and, since there is a time gap between the writer and the reader, the expression may not be as colourful as speech.

Reading and writing permeate the total curriculum and draw on all of the child's experience in his investigations of his environment, of the expressive arts, and of language. They cannot be taught effectively as separate "subjects" in isolated periods.

Reading

Reading involves an interaction between an author's ideas and a reader's experience. Interpretation and personal reaction to the ideas presented by an author form the heart of the process. Therefore, reading is more than the ability to decode words. It requires thinking: problem-solving, analyzing, judging, evaluating, and synthesizing. A reading program should be planned:

1. to help each child understand and appreciate the process of reading by allowing him to become the author of reading materials;

2. to help each child become aware of the significance of reading in his own life by using the reading materials within his environment (signs, labels, newspapers, magazines, billboards, recipes, directions, etc.);

3. to help each child develop the strategies he shall require to "break the code" which allows him entry into the printed pages;

4. to help each child gain independence and fluency in reading through the use of a variety of materials;

5. to help each child understand and interpret the ideas presented by an author beyond the stage of factual recall;

6. to help each child develop the ability to read critically and to react personally to ideas presented by an author;

7. to help each child discover that reading is a source of information by providing activities which generate questions and the skills he requires to find the answers;

8. to help each child discover that reading can offer personal enrichment and growth by reading to children regularly from the best literature available (modern, classic, folktales, myths and legends), and by introducing children to a variety of quality books geared to their interests and maturity;

9. to help each child find personal satisfaction and pleasure in reading and to recognize and appreciate material of literary value.

Criteria for an Effective System of Teaching Reading

Some of the criteria of an effective system of teaching are to:

- draw on children's language experiences, vocabulary and sentence structures in providing reading experiences;

- use children's own responses as far as possible, to create reading experiences and material, and in particular to link early reading to writing;

- match children's real experiences with oral language and this in turn with printed language;

- relate reading to real information-seeking situations and move the child on to real books of various kinds, however simple, as soon as possible;

- provide a learning environment which focuses the child's attention and stimulates his interest in the significance and use of graphic symbolism;

- provide for a flexible response to different children and at different stages, so that the different kinds of reading techniques perceptual, phonic, structural, and semantic can be developed as appropriate and as needed;

- emphasize significance and meanings as the purpose of reading in helping the child to develop strategies;

- use the child's capacities and needs for discriminating, comparing and classifying;

- explore the learnings which develop when a child perceives discrepancies and learns through correcting his errors;

- emphasize reading as an active process, requiring trial responses and checking by child and teacher, not the learning of sight words or rote patterns;

- make use of structural clues in reading material by suitable choice of experiences or materials so that the child can contrast and change word orders and patterns. If needed, provide structural controls and cues for the child's own language by using moveable printed material;

- adopt a rational system in dealing with early code-breaking aspects through using the spelling patterns of English as a model of the association of sound and symbol;

- use intensive brief practice situations, games and activities to reinforce particular aspects of reading which have already been approached actively;

- use nursery rhyme and song material for early reading and as supplementary material. Support this with records, tapes and films;

- use children's language, their own stories, vocabulary and structures for early primers;

- draw on authentic folk-tale, legend, myths and literature for early reading material.

Growing into Reading

Living depends on one's capacity to notice, interpret and respond to people, things and circumstances. This talent begins at birth and gains in complexity through adulthood. The child interprets his world with his muscles and his senses. He searches for meaning by investigating:

. how it looks;

. how it sounds;

. how it smells;

. how it feels;

. how it tastes.

The child responds to it by investigating further or reacting to its temperature, textures, shapes, mobility and weight. He discriminates and evolves strategies using cues to identify the name of his favourite TV program, his favourite food, his toys, his name, his favourite book. Some children identify street and road signs and will draw a driver's attention to stop signs, stop lights and speed limits. In this process, the child develops his own strategies for identifying and interpreting symbols. He does it in his own way, at his own pace, and in his own time.

Just as an infant listens and responds to words long before he says them, so a child watches the process of reading and writing long before he does any real reading and writing of his own. When he is mature enough to hold a crayon, pencil, or felt nib pen he may scribble his own version of adult writing or perhaps "read" a favourite book to a friend or a doll.

In an environment where adults read and share their reading with him, the child develops a positive attitude toward learning to read. Most children have manipulated and used books in a variety of ways and have discovered that there are certain books that are special and fun to hear and look at over and over again. If a child grows naturally into reading in his pre-school years, he has an excitement and interest which must be maintained throughout his life at school.

Young children perceive oral and written language as an unbroken flow. They do not discriminate words, which are an invention of print, until much later. They have to be helped to realize that words are separate and significant and that the spaces between are important. The fundamental discovery is that printed language matches speech and has an order and sense which is in some way similar. This precedes any question of discrimination of letters or sound-letter correspondence.

Pictures are not self-evident. Their interpretation depends on knowledge and experience. Much that is obvious to the adult depends on a knowledge of artistic conventions and on background information. It is not so obvious to most children, and some may have particular difficulties in processing visual information. Non-verbal readiness tests for young children that show this ambiguity should be avoided.

The ability to follow sequences of pictures, events and words is basic to reading. Interrelating these requires quite complex mental processes which develop through appropriate experiences.

One of the basic tasks of reading is to discriminate and distinguish letter-forms and associate them with sounds. The young child makes many errors of inversion and reversal in comparing and, particularly in copying, significant shapes such as letters. These may not disappear until eight years of age in some children. Experience of playing with, discriminating, and using letter forms improves performance. Even younger children can make efficient discriminations if motivated and given clues.

A firm sense of laterality, that is, sense of oneself in space in terms of left and right, and awareness of which side is moving, grasping, and performing skilled functions is slow in developing. It may not be established in many children until six or seven years of age. Some children continue to show confusion. Since reading depends on sequence and left to right scanning, confusions of orientation can affect it.

This sense of space, of body awareness, of left and right, is developed through movement and through physical activity. Play out of doors and encouragement for the child to explore the range of how he can move are important learning activities. As the child jumps, runs, spins, swings, hangs, he can become aware of himself and his capacities and can develop a positive body image. As he plays with others, moves around, through, or over obstacles, solves problems in physical terms, he adds an important dimension to his growth that fosters his initiative, confidence, and imagination.

Beginning Reading

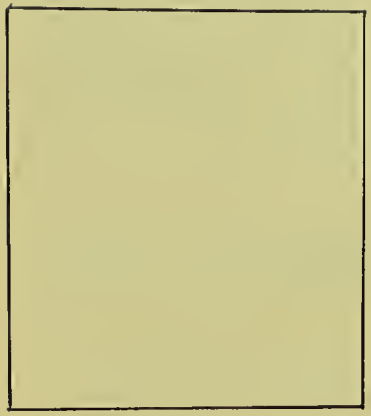
There is no one successful "method" of teaching reading to all children. Researchers who have attempted to compare the many "methods" for teaching reading generally agree that children do not learn to read because of a particular method but because they evolve strategies for themselves.

It is important that a teacher observe and understand these strategies and adjust technigues and materials to meet particular interests and linguistic abilities.

First he must consider the skills and knowledge a child has already acquired. His major accomplishment to date has been learning how to speak. In doing this the child has evolved his own patterns. These have developed by trial-and-error through the feedback he received from his listeners. Gradually he has developed the rules to handle the grammar and he has shaped his language to correspond more and more to the language spoken around him. Given the opportunity, he will apply the same strategies to reading: looking for significance, using clues, and searching for rule and meaning.

Most children have had considerable experience in using the thinking skills involved in reading. They have had some experience in discriminating, comparing, classifying, and solving problems. Their visual and auditory acuity is adequate for the discriminations they will be required to make. If either is defective, it will become evident in their general activities in the classroom. However, a child does not know where to look for significant cues for decoding and interpreting written language. The teacher must help him do this.

Reading develops in the context of a rich language experience in which children are provided with a wealth of visual and auditory stimuli through real experiences, books, films and filmstrips, records, music, songs and poetry. The child must be given the opportunity to respond to things that interest him and to express his ideas in writing, drawing, painting, modelling, movement, and dance. Then he can extend his existing knowledge of syntax and sentence structure and produce reading materials which are meaningful and interesting for himself and for others. This then provides the raw material - the written language which the teacher uses to teach the necessary word recognition skills and the children use to make discoveries about printed words.



It is not known how a child learns to read but it is expected that he will make errors in his first attempts at coping with print. His errors are indicators of his attempts to interpret print and should be used in a diagnostic and constructive way to find out how he is operating. Some children use the shape of words as clues, others identify similar beginnings or endings, and others seem to learn words by spelling individual letters.

In all learning the first stage requires many opportunities to explore, play, and discover. Reading is no different. The child must be given the time and opportunity to develop his own methods for discriminating and acquiring words.

The material a child uses for his explorations will be his own - the words and ideas which have come from the real experiences he has had. The teacher writes these out for him and assists in the process of discrimination and comparison.

Once printed words are familiar most children find them interesting for their own sake. They enjoy using them to build new sentence patterns, grouping them into families of rhyming words or words that begin the same way, seeing little words in larger words, and making new words by adding

prefixes and suffixes. They enjoy collecting, sorting, ordering, and classifying words: in alphabetical order; colour words; action words; words that have interesting and beautiful sounds; etc. These activities reinforce and extend a child's awareness of words and help him begin to cope with written language.

Language games support the process of individual learning, but do not replace it. As a child progresses, he can usually

. group words with similar patterns, especially beginning or end symbols

. group letter symbols or spelling patterns

. make new sentences by altering order, or using new words

. make new words by altering order or substituting letters

. play stepping stones from one word to another by changing one letter at a time (How does pat become fun?)

. associate letters with sounds and objects

These activities should be in game situations, intensive and interesting, not formal exercises. Many lend themselves to simple filmstrip or slide-tape presentation.

The teacher's role in this process is to provide the words a child requires and then direct his attention to the distinguishing clues. These may be visual or auditory or may stem from the meaning or structure. It is crucial for the teacher to remember that words only have meaning within the context of a sentence. It is only when a child can respond to written material with understanding, personal interest, and satisfaction, that he can be considered a reader.

In summary, the child uses a multiple set of clues. Some children may respond to visual clues, others to auditory and others to meaning. Teachers must, therefore, use a variety of approaches to accommodate varying styles of learning. All approaches are necessary

The teacher also has preferred styles of teaching and method or materials which he finds work best. He should be aware of his preference, explore its strengths and check it constantly with the children's needs.

Further Development in Reading

Children in the Junior Division often begin as eager readers and make tremendous strides in their capacity to read with maturity and power. A wide range of abilities in reading and language development is evident. Some children still lack the skill and security they require to forge ahead. They are in a stage of transition and may require the security of controlled material as a temporary bridge to help them move into more realistic and individualized reading.

Children in the Junior Division need to understand the reading process and the competence they require to read with understanding. This knowledge helps them accept the responsibility for broadening the paths by which they can attain independence in reading. These will include:

. continuous and efficient use of library, reference and resource materials;

. wider reading in a variety of content materials;

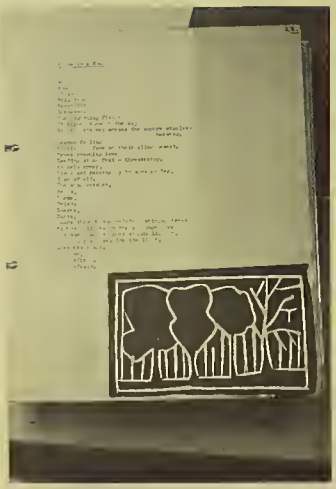
. reading whole books and novels;

. individualized unassigned reading of books, magazines, newspapers, and periodicals.

In order to accommodate the wide range of abilities and interests at this stage children may be organized in groups. These groups should remain flexible, meet at various times of the day, and have their activities related to individual and group needs. Children of this age are more capable of assuming responsibility and can help one another. The teacher can be freed to work with children who require assistance and guidance.

Programmed skill building materials and basal readers can help the child who is not yet independent. It is important, however, that the material support the child's development of a variety of techniques and not become the total program in reading. Teachers must recognize that a highly structured program tends to stress reading for correct answers. This emphasis robs the child of the opportunity for personal interpretation and response. It is real-life reading and real books that provide realistic and rewarding content for children.

At this stage children should be guided into a more integrated use of word and meaning clues. An interest in new words from many contexts can be generated through a concentrated look at the origins of words and the recognition of the variety of context clues an author uses to help the reader gain the meaning he intended. Dictionaries can become prized possessions at this stage if an excitement in discovering new words and meanings is generated by the teacher. As the excitement grows children will transfer the vocabulary and techniques used by authors into their own personal written expressions.



Broadly based units of work that generate personal inquiries and questions lead to extensive use of library and resource centres and offer excellent opportunities for children to grow in their use of a wide assortment of reference and resource materials.

The teacher and librarian must be aware of the readiness of children for particular kinds of activity and provide direct instruction as required in the use of references, maps, and other resource materials.

The resource and reference techniques involved include:

- defining questions or problems specifically in realistic terms so that solutions can be found;

- collecting information from a variety of resources and using primary resources such as people and places before film, slides, tapes, pictures, and books;

- learning how to get information from people through conversation, interview, and discussion; from places and things through observation, tape recording, photography, collections and surveys; from graphic sources such as pictures, cartoons, diagrams, charts, maps, and tables; from audio-visual materials;

- learning where to find the materials required and how to use them;

- checking information for relevance, authenticity, and bias - a skill developed in regular discussion as a unit of work progresses;

- paraphrasing and summarizing pertinent information and translating it into another form.

The process of paraphrasing what has been read is one of the best approaches to questions about comprehension. If the child can paraphrase his reading into an equivalent that is not a direct copy, he has probably assimilated the book, the paragraph, the sentence or the phrase into his system of meaning. A paraphrase might be an oral or a written response. It might, however, be a picture, a model, a map, or a diagram. This suggests that some of the work books and pencil and paper exercises related to basal reading material are of limited value, especially if used alone.

Comprehension at this deeper level involves a commitment and a sharing of minds which must be exercised in oral expression or other forms of communication. It is not tested in a workbook or a standardized test. Its measure can only be found in the kind of expression that is illustrated in the child's writing, his paintings, drama, model, or map, and also by his excitement and drive to record further. One of the most important outcomes is the discovery that reading does offer him personal satisfaction and enrichment.

Reading in a variety of content materials including newspapers, magazines, directions for models, recipes, instruction, sport manuals, and cartoons, helps children recognize that techniques for reading differ according to the material. For example, detailed directions in science experiments and problems in mathematics require a slower pace than one uses in reading an interesting novel or news account or magazine. This helps the reader at this stage gauge his speed to his purposes and the reading material. The teacher must help the child to vary his approach - to scan, to speed up, to slow down and look for detail, to become aware of what is involved in factual prose and what is involved in reading imaginative prose.

In the Junior Division children are eager to read longer books and novels. This experience helps them appreciate the manner in which an author develops an idea, weaves a plot

and makes his characters come alive. There are different levels at which novels can be read and it is important that teachers consider the maturity of the children involved and use an approach which will excite them and deepen their appreciation for books rather than view the reading of a novel as a series of comprehension questions.

Later in the Junior Division children should meet more difficult materials which present conflicting ideas. Comprehension and interpretation of these materials requires the ability to read critically and to probe more deeply for meanings. This competence is developed in small group sessions through many experiences in assessing reading in terms of fitness, appropriateness, and literary value. It grows in discussions with peers and adults and involves a return to the author and his ideas. Children must be encouraged to share personal reactions.

The Junior Division has been identified as the golden age of reading. If children are not "hooked" on reading at this age they will not return to it as adults. This is the age at which children develop personal reading interests and need the time for reading from a wide selection of materials. They need to be free to read without the checks and "catches" which some advocates of the individualized reading programs suggest to assess comprehension and vocabulary. Free comments and informal discussion will provide the information a teacher needs about a youngster's personalized reading.

This individualized unassigned reading requires stimulation. The paperback market and shelves in public libraries are filled with new and old books for children. The classroom must be also. Teachers must be prepared to share books with children and to read to them regularly at all age levels. Books which are above a child's reading level can introduce children to the whole field of literature. They include books that have stood the test of time, modern literature, poetry, legends, myths, folk tales, and books which present our Canadian heritage.

Writing

Writing and symbolic representation help children organize their experiences so that they can communicate them to others. They help to organize and extend thinking. They are used to inform people, to explain things, to persuade and to express feelings and to get response.

The ability to use words well and to express oneself with sensitivity, clarity, and conciseness of expression in writing is an achievement which, once developed, will be used in all written expression. To achieve this goal a child must have something to write about, a wealth of words with which to express his ideas, competence in translating his ideas into written form, and the opportunity and time to write.

Children write for many reasons and generally the purpose determines the form the writing will take and the kind of language that is used.

Personal or creative writing draws on a child's store of personal experiences, feelings, emotions, and imaginings. It is an expression of self and involves the language of self discovery. It may take the form of a personal letter or note, an imaginative or fanciful story, a poem, a collection of impressions, or a description of an experience.

Writing, which is more formal in nature, serves more functional needs and represents a large portion of a child's writing in school and in his life as an adult. It is used:

. to record information in the form of notes, summaries and study guides in order to organize it and recall it;

. to record facts such as distances, directions, addresses, and telephone numbers;

. to provide sequential instructions for specific operations such as baking a cake, building a model, or conducting a science experiment;

. to report news items, sports events, and observations;

. to write memoranda, shopping lists, and check lists.

Young children make little distinction between kinds of writing. To them all writing is personal. The division between personal or factual writing reflects the practice of the school. If creative writing is limited to a "period" in the day when they "work over" the language of a textbook or workbook or write in response to a number of suggested titles, writing is viewed as a means of recording information, copying and writing neat restrictive statements and notes. In fact, it is not creative at all.

Real creative writing flourishes in an environment where personal expression is reinforced and shared; praise is offered where it is due; exciting phrases, paragraphs and poems are shared; stories and poems are displayed on bulletin boards; poems and stories and books are edited, typed, and featured in a library or resource centre (always with the author's permission).

Creative writing does not grow in a vacuum. Real experiences indoors and outdoors are necessary. These experiences feed the senses and provide the rich store of impressions which enrich a child's personal awareness of himself and his world. The teacher or adult can add depth to these experiences by helping children explore them more intensely. He helps each child feel what he touches, listen to what he hears, and observe and watch what he looks at. The teacher's running commentary in this process provides the language and vocabulary the child will require to convey his ideas more accurately and precisely.

To sharpen a child's sensitivity to experiences and to help him crystallize his ideas, all forms of expression (discussion, art, construction, drama, movement, and sound) must be available. Many children need to express their ideas in other language forms before they write.

In the early years children are given many opportunities to express their experiences and interests through the language forms suggested above. These expressions will transfer into writing very naturally and easily. In the initial stage the teacher is the recorder and transfers the ideas of individuals or groups into print. Reading and writing are combined at this stage and the child can either reproduce his story by "tracing over" or copying the teacher's print or manipulate his own personal card collection of words to build his stories. Gradually, with encouragement, a child will become more independent and find the words he needs in the variety of sources available to him (personal lists, collections of words on charts or picture dictionaries). The stress at this stage is on quality of expression rather than neatness and correction. Spelling, punctuation, and printing can be dealt with on an individual or small group basis after the fluency and spontaneity are established.

In the Junior Division a child who writes freely and well in one mode usually writes well in another. He begins to establish an individual style and preference. Some children are happier with factual prose while others prefer imaginative prose or poetry. Their purposes for writing become more varied and they can be helped to see when a particular kind of writing is appropriate.

Older children still require help in seeing things more vividly, feeling more intensely and maintaining their powers of perception through constant stimulation. They must be helped to write in such a way that, having given expression to their feelings, the experience becomes clear to others. Perhaps the best resource for helping children gain sensitivity and sincerity of expression is many exposures to poetry and literature. Books and collections of poetry in which authors describe their own experiences and feelings vividly will help children develop interesting and imaginative forms of expression.

Young writers need to be encouraged to collect words and impressions. These collections will evolve from real experiences, discussions, and reading. In the process of helping children explore their world more intensely, words and phrases associated with real experiences can be recorded on charts and become a reference. Visits and interviews with artists, poets, and authors and a discussion of how they create will stimulate older children to search for words, phrases, and expressions and record them for future reference and resource.

Writing develops from real writing experiences and will improve as a result of healthy discussion and constructive guidance from a child's peers and his teacher. It is in the contact with a teacher who shows real interest and sincere appreciation for the ideas expressed that a child learns what is possible in writing and what is expected of him.

Children need individual help in learning to write well and to select suitable vocabulary and structure. The time spent on group or class instruction should be limited. From the middle of the Primary Division, the child can be helped to move from phrases and single sentences to a connected account. This involves more than simply writing a succession of sentences or refining the connections between them. The power and complexity of writing should grow hand in hand with increasing ability to organize information. A child should be helped to look at his own writing and improve it. There is little point in trying to get children to write more complicated sentences in terms of length or to add adjectives. As a rule, children at the elementary stage operate with two or three concerns at a time and can handle two or three connections. Their vision is wide, detailed and dramatic rather than concentrated. Writing of the more obviously complex and formal type begins to develop in adolescence as pupils enter a new stage of formal operations in thinking.

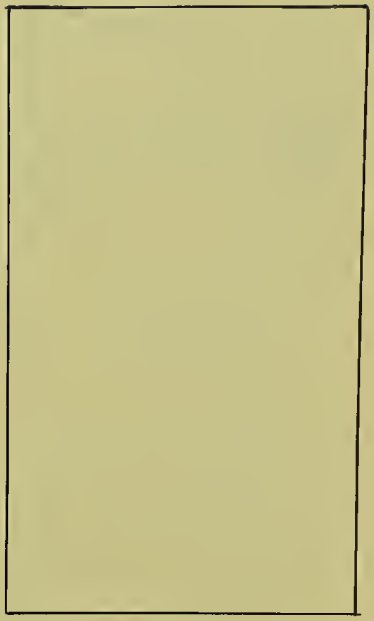
The teacher too should review and discuss the writing to encourage children to attain more mature formulations and to become more precise and coherent.

This type of help will be more valuable than formal attempts to teach style or to develop greater compactness or complexity.

The same techniques for improvement appear to work throughout the Primary and Junior Divisions; discussing expanding a child's expressions, suggesting a rewording, asking him to read to the teacher or to the group, and getting him to ask himself if he has communicated what he tried to. Sometimes allowing a child to put his work away and look at it after a month or so will enable him to suggest improvements that he might have missed just after writing it.

The whole point of writing is to communicate with others and essentially the only way in which a child can learn to write is by writing.

Writing is involved in all aspects of the curriculum. Environmental Studies and the Arts provide many definite and real purposes for writing. In group discussions and discussions with the teacher, children decide on the best way to present and share information or express ideas and feelings.



Such considerations help children identify the purpose of writing and the alternate ways of recording which are available to them.

Individual and group units of study provide opportunities for exploring a variety of writing activities. In the beginning stages of the Primary Division the teacher will record many questions, information summaries, and discoveries on charts. By the end of the Primary and the beginning of the Junior Division, individuals and groups will develop the skills required to write:

- short reports on a study with each child contributing at his particular level;

- summaries of information from a field trip, a filmstrip or book;

- outlines or main ideas of information to be presented orally to the class;

- scripts for a radio broadcast, a slide presentation or a dramatization;

- descriptions of interesting trips or experiments;

- a diary or log book recording the development of a particular unit of study;

- booklets of various kinds, containing stories, news and accounts of visits and experiments;

- letters for permission and information and personal letters to friends and pen pals.

Children in the Junior Division need guidance in developing the techniques of taking adequate notes from reference materials. They should be helped to locate the main ideas they require, translate them orally or in point form, and then rewrite them in their own words.

Writers require materials such as lined and unlined paper of different sizes and textures, pencils, crayons, magic markers, collections of pictures and home-made empty booklets of interesting shapes and sizes. Typewriters, gestetners, and copy machines are useful to the older children who are producing newspapers and books. Children of all ages will recognize their writing as acceptable when the books that they have written are given a place of honour alongside the printed books in the library.

Grammar and Usage

Speech and writing should develop in precision and accuracy, but the ability to speak and write fluently and articulately should be the first concern. Improving accuracy and style should follow and can only be done effectively if something is produced that can be improved.

Because usage changes, especially in spoken language, it is important to relate questions of usage and style to the effectiveness of the communication rather than to arbitrary standards of "correctness". In writing, however, where usage is more stable, and where non-standard forms may be a barrier to effective communication, the teacher should help the child develop writing power in the way that best conveys meaning to a reader.

A child has an intuitive knowledge of the rules of his grammar at a very early age. There is no evidence, however, that he is helped to speak, write or think by studying rules. Practice in changing tenses, using synonyms and other transformations may help to some extent, but competence will grow best if such changes are made in real writing rather than in corrective exercises.

The study of formal grammar is inappropriate until the Intermediate Division. The child has the ability at an earlier stage to acquire terms, pick out grammatical forms or study the relationships between the constituents of a sentence, but the activity is like playing with a verbal construction kit rather than contributing to the development of accurate usage. Time spent on the study of grammar could be better spent in speaking and writing. Moreover, much of the grammar found in school texts is a prescriptive grammar that is not only irrelevant but incorrect in terms of modern language.

Towards the end of the Junior Division children may become interested in word forms or in the history of the language. They can undertake comparative and experimental investigations into language by listing words and their order; by comparing the kinds of words that normally occur together or at particular places in a sentence; or by studying ways in which changes in sentence and word structure change meaning. This kind of activity should not be confused with formal grammar. Children seem to learn best when they are given a chance to play with new usages, to make comparisons and to explore the effects of words. In the young child this play may be a physical moving of words or letters. The older child will experiment with more abstract variations and combinations.

Spelling and Punctuation

Spelling and punctuation are conventions which facilitate communication between the writer and the reader. They are not ends in themselves. Like any other aspect of communication, strategies for developing competence in using them must evolve from real needs in communication.

Competence in spelling is closely connected to reading ability and an awareness of how words are put together. Some children read widely and have had many opportunities to experiment and play with words: pulling them apart, putting them together and building new words. They are conscious of the parts of words. If phonic and spelling patterns have been included as part of an effective word analysis program children appear to develop strategies for making sense of spelling rules and their exceptions.

Spelling is more than memorizing lists of words from spelling textbooks. The best source for words is written expression. These are words which a child has misspelled or wishes to use in his writing and are specific to him.

When children have gained fluency in writing there is merit in helping them develop strategies for working through problems in spelling with individuals or in small groups. They

can be helped to categorize words from their personal lists according to common spelling patterns expressed as rules. It seems doubtful whether exercises in spelling transfer very effectively to writing.

Some children will require more direct guidance in focusing on different aspects of a word, the beginning, the end, the medial vowel, syllabic units, or whatever technique may help him most to remember the pattern. All children will gain from working in pairs or small groups on spelling and word games either made by the children and the teacher or available commercially. When the "buddy system" is used in sessions for practice and dictation of personal spelling lists the teacher is free to work with children who require more intensive guidance.

Spelling sessions should be brief with a focus on understanding and direct application. The child is helped to understand the structure of words and through a process of comparing and contrasting develops the rules he requires to deal with the spelling patterns of English. Instruction and practice should be specific and concrete, limited to words which cause difficulty.

Punctuation practice also evolves from a child's written expression rather than language exercises. This enables the child to understand the function of punctuation and to realize that it represents a number of signals which man has invented to use in the place of intonation and stress in speech.

Writing is speech and the teaching and practice of punctuation should be through speech. The child should read aloud what he has written and try to communicate the stress, the intonation and feeling. He can be helped to see where sentences appear to end, where there should be periods and pauses and begin to put them into his writing. Some children in the Primary Division are ready to discuss techniques such as quotation marks to show that people are speaking.

In classrooms where children are provided with opportunities to write, discuss and share their writing with others they will become aware of the need to use punctuation marks which indicate question, surprise, interest, fear or excitement. In discussing reading the teacher can draw attention to how an author produces particular effects in dialogue and description, how punctuation is used to alter pace, to build suspense, to introduce surprise and to list things. Children will experiment with these techniques and will experience many errors. It is a useful technique not to correct errors at once. They are only indicators of a development towards more efficient mastery. If children are encouraged

to collect and store their written expressions in personal folders they can go back and correct them as they gain skills in punctuation and spelling.

It seems probable that much that causes difficulty in punctuation and other so-called mechanical aspects of writing and reading would yield to time and patience.

Handwriting

Writing is a complex sensory-motor skill requiring various combinations of motor-coordination, visual acuity, and visual discrimination. It is a developmental process and is one of the graphic arts, but because it is used as a means of communication it is usually taught in the language program.

Writing expectations of children in the primary years must be realistic and should be based on the developmental nature of growth in the process of writing. Children should not be pushed into writing activities too soon. Long before they are ready to write they should participate in activities that involve the large muscles - clay, paint, scissors, and water. All help develop skills on which writing is based.

The young child is also interested in scribbling, drawing, painting, modelling, and constructing, without being aware that these are pre-writing activities. The sensitive, aware teacher is ready to capitalize on these manipulative experiences to help the child gain control over the tools used in writing. However, there is very little sense in attempting to teach a child to write before he can express his ideas orally. Only the stimulus of challenging and varied activities will motivate the desire for communication and self-expression in written form. All children wish to express themselves in writing, the problem is for the teacher to encourage the desire and seize the most teachable moment. For example, small children will scribble letters and stories and "read" them back either to a parent or a teacher. The first letters to Santa Claus, the message on home-made birthday cards, are other examples even before the child is aware of words and letters. Later he will dictate captions to an adult who will act as his scribe. If the adult is a teacher, he should use a thick felt pen and write the child's dictation clearly and carefully. This print that the child sees will be the script that he copies, therefore, it is essential that the child observes accurate movements and that the script is large and well-defined. There is no advantage in teaching children to write on lines at this stage; in fact, the introduction of lines imposes too many controls for children of this age.

It has been customary in the past for children to practise writing between lines spaced at various widths the width narrowing as the child increases his dexterity. There appears little to commend this practice. As long as the child is given a guideline as a base, he does better in being able to write letters and words of the size that he finds suitable. Lines for writing are better delayed until the child has established good control and has a better sense of the line. Later he can begin to appreciate the reasons for setting

out written work with margins of varying width and lines between the paragraphs in order to make the account he is writing more understandable and to give the work greater impact.

Large, easily manipulated felt pens and crayons and large pieces of plain news print set out on a writing table or clipped to an easel will give small children opportunity to experiment with writing at any time during the day. A box of large cards each with a word and a picture or a sentence and a picture should be on the table. The materials selected by the child would then be placed next to him, either on the table or propped up on the easel.

Children are frequently required to copy material from a blackboard. Many classrooms also have a display of standard letters of the alphabet, in a particular handwriting form, displayed high up usually at the rear of the room. It should be noted that copying from the blackboard into one's own style of writing is a highly complicated task which requires a considerable degree of line visual control and feedback. It involves adjusting from one size of print at a distant point of fixation to a smaller size which is in fact larger, as seen by the child, at the near point of fixation. In addition, the child has to memorize what he has seen in the brief interval between seeing on the board and noting it down. In other words, copying from a blackboard or copying letters displayed in a different size of type at a distance is a difficult and artificial task.

It seems doubtful, therefore, that displays of letters and handwriting are very realistic or useful in a classroom. If the child is to follow a model, it should preferably be presented on cards or in a book which the child can keep on the writing surface in the same plane and in the same range of fixation.

The pressure for neatness and precision does not belong in the first two years and anxiety to establish proper writing forms in the primary years is misplaced. While all children must learn to write in such a way that their writing can be read, premature insistence on form and accuracy will cause tension and even fear. A child needs to practise the technical aspects of making letters but only at the same time that he is encouraged to see and use writing for communication. Most young children are able to copy their names and many can even print them without models but notices, invitations, lists of materials for projects, could be copied by individuals or small groups, thus giving their writing real meaning.

A large book made of sheets of newsprint can become a class news book where all the things that have meaning for the children can be recorded, such as: arrival of a new baby, a lost tooth, the acquisition of a new car, new shoes, or a trip to another town. These are things which loom large in a child's world and, when recorded, will make a unique book to be re-read with great interest. The children will begin to create their own books of events and here the teacher will be able to help each child with letter-formation of a one to one basis. There is little purpose in large group or class lessons in hand writing. On many tasks (once the child has acquired writing skills) writing will be practised daily. Neatness and precision are a matter of coordination and practice, affected in no small part by whether the child values the appearance of his writing or whether he is indifferent to it.

It is important that handwriting be seen as an art form. Whatever style of writing is adopted the child should appreciate the attractiveness and legibility of its design and learn to use it in a measured and precise way.

LEARNING A SECOND LANGUAGE

Learning a second language is similar in many respects to learning one's mother tongue. There are also considerable differences, especially in connection with learning a second language in the school context where conditions and available resources are different from the more natural surroundings of the home in which the mother tongue is learned.

In Ontario there are various contexts in which children learn a second language. The English-speaking child typically has his first such experience with French: there will be differences depending on the language base of the community.

As the Native child moves into school he enters both a linguistic and a cultural milieu that may be completely different from his own. He enters a society where oral tradition has a different place and where the need to support his awareness of and membership in his own tradition is especially important.

The French-speaking child may have his first introduction to English in the classroom or may in fact speak some English before he arrives at school.

Other students may come to school with little or no English by virtue either of immigration or of being brought up in a non-English speaking home. In this latter case the teacher may not speak the child's language.

There is no general agreement about how language is acquired. There has been a shift from a relatively mechanical view of language learning and use which emphasizes imitation, habit formation, and pattern learning, to a view which concerns itself with a more creative aspect of language learning. In this view the learner is considered an active participant whose understanding and response must affect his ways of learning. This latter view suggests that there must be different kinds of materials, methods, and sequences in learning language to meet individual needs and, in fact, that the closer second language learning can relate to the natural language learning pattern of each individual, the more likely is the approach to be effective.

Different views of language and learning patterns are not necessarily at odds with one another. The formation of habits in language and the search for rules should be complementary and can follow upon the use of a number of approaches, both those emphasizing communication, understanding, interest, and meaning, as well as those that further the habit formations necessary for fluent speaking.

No single factor such as teacher, method, materials, or learning aids can on its own ensure the learning of a language. These factors interact with one another and must be seen in

conjunction with the student's motivation as vital considerations in planning a program.

Of the variety of approaches available to the teacher there seem to be three major approaches. The "Direct Method" follows the developmental pattern of a mother tongue in that it asks the learner to learn through continually hearing and using the language. So many factors are different, however, that it does not follow that a child can learn another language best by being confined to this method.

The "Grammar-Translation" involves simultaneous study of language structure and translation into and out of the language being learned. With its stress on formal structure and typically on written work, it would have relatively little application at the primary and junior levels.

"Audio Lingual" methods emphasize the child's need to hear, discriminate, and begin to use the most frequent language patterns. These approaches are well suited to the use of taped materials. Language is typically acquired through the processes of substitution, elaboration, transformation, and use of vocabulary and knowledge acquired in previous learning.

A language learned in the classroom must be subject to a degree of formal study. The nature of this practice will be determined by many factors, such as the nature of language aptitude, the

relation between first and second language learning, and many others must be answered by practical decision – rather than by theory. Approaches should be used in varying measure, depending on the needs and age of the learner, his language background, the stage of learning, and the degree to which a second language is found in the community and is reinforced there. The English speaking children in a French community or an Italian speaking child in Toronto have greater opportunities to hear and use their second language than those whose experiences must be confined to the school.

For this reason, the second language should not be studied throughout exclusively as a subject. Opportunity should be found for integrating it, when the child has established a basic mastery, with other studies in the curriculum. Language situations can arise from news, current events, discussion of interests and hobbies, from discussion of topics in environmental study, preparation for following up field trips, the use of puppets and dramatic play situations. Particularly with young children, the teacher should seek to create realistic and dramatic situations, based on experiences in the street, the store, the hockey game, the home, in order to create interest and motivation.

For students who are learning English as a second language in an English language context, extensive use should be made of the opportunities that exist in the community for learning the language in real life situations. It is also important that teachers be aware that the aim of teaching English as a second language is not to replace the language and culture of the child but to add another valuable dimension to his ability to communicate. The experience with English should not undermine the child's self concept which may be perceived in terms of his mother tongue. A request from the teacher, for example, for the way to say something in Hungarian, or how something is done in Italian custom can serve as a gentle reinforcement of the idea that the teacher takes interest in the experience and heritage of the child.

In this situation, as in others, the attitude of the teacher will be communicated to the class and will affect the success of the language program. A climate where language learning is recognized as a worthwhile activity is one of the most important components in a successful language program.

ENVIRONMENTAL
STUDIES

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Environmental Studies is concerned with people who are communicating, forming social groups, organizing and protecting their institutions, and attempting to improve on the heritage of the past as well as keep it.

with communities and settlements: how people live or have lived, their work, play, contributions to community in providing for themselves or others by using and exploiting available resources.

with questions about human customs and institutions: why they are there; how they have come about; how they change.

with inter-relationships in the environment, between physical events (such as weather, speed of steam and erosion), between the physical background such as soil and living things, and between living things.

with technology - how tools and machines were created to meet human needs and how these have changed ways of exploiting the environment, producing, travelling, communicating, and so in turn have changed social life. These range from the plow or the old saw-mill to the snowmobile.

Environmental Studies is not a subject in itself. It uses the world with which the child is familiar as a basis for the development of values, attitudes, concepts and skills that will be of value in any learning situation.

Environmental Studies must begin with children in their environment, with what is immediate and specific. A discussion or theme can start from any aspect which is relevant and provokes interest. It goes from the known to the unknown. It is a network in which learning begins with the child's HERE and NOW; arising from his questions, his present knowledge and his concerns. But it should, under the guidance of the teacher, enable the child to trace out wider and wider connections, to move out in space, and in time, in ways appropriate to the child's level of understanding. This is why topics of study may lead to other provinces, possibly to other countries, and why, as the child gets older he is more likely to move into this broader domain. It is essential that the move must follow children's levels of understanding and their ways of working and not be strictly tied to a particular year or grade.

Environmental Studies relies on the curiosity which children bring with them to school, their expanding interests and their need for explanations about natural and social events. Decisions on the themes to be studied are shared by the children and the teacher. But the teacher must accept the responsibility for planning and guiding the learning without reducing the children's freedom to ask questions and select alternatives to suit their own needs.

Aims

Environmental Studies should contribute significantly to the development of the child's sense of self-worth and those attitudes and techniques which enable him to adapt his learning and extend it to meet new situations. The aims for this area of children's experience are:

- to acquaint children with their social and scientific environment so that they can understand and participate in it throughout their lives;

- to build foundations for informed and rational attitudes and decisions;

- to use the enthusiasm generated by active investigation of the environment to stimulate other aspects of learning;

- to lead to a reasoned knowledge of and pride in Ontario and Canada and set the child, in his own way, on the route to understanding his environment and community;

- to emphasize the importance of the child's direct contact with learning situations beyond the classroom.

THE DEVELOPMENT OF VALUES

Values may be defined as those qualities of life (honesty, worth of the individual, integrity, dignity of man) considered by the individual and/or society to be important as principles for conduct and as major goals of existence.

Values may be consciously selected or unconsciously acquired. In any event, if the individual or society is to experience an integration of values without dissonance, values will need to be consistent though they may be different and or unequal importance. The hierarchy of values resulting from an acceptance of a variety of values of differing degrees of significance involves the ordering of those values into a cohesive system as a guide for conduct. Such a system implies that value conflicts may be rationally resolved and appropriate decisions for action taken in situations in which a value conflict, or a choice between different values, is implicit.

The development of a value system implies a valuing process, a sequence of steps by which the individual develops his value system. Such a definition implies order, rationality and the interaction of cognition and affect.

It is suggested that the valuing process is as follows:

1. Becoming aware of values
2. Identifying value alternatives and their consequences
3. Selecting personal values from the alternatives
4. Internalizing the values selected
5. Acting in accordance with the values selected.

The investigation of values involves moving from "what is" to "what ought to be"; it involves the raising of value questions, e.g., from "how does the story end?" to "how would you like it to end?" There is no subject which does not have value connotations or implications, and these should be openly explored.

If, for example, children were to visit a zoo as part of a study of animals, values could enter into the study: "Should wild animals be kept in captivity or be free?" Such value questions could stimulate a discussion of the nature of animals, of man's relationship to nature, of the preservation of species, in which value issues and conflicts might be identified, and from which children could consider what their value judgment are. Teacher and learner alike are free to contribute their ideas for scrutiny.

If a medieval community were the focus of inquiry, the question "What should be the relationship between individuals?" could grow out of the study of chivalry, of lords and vassals, of serfs, of castles, of stories like the Knights of the Round

Table and through the process the child could clarify his perception of the dignity of man.

The teacher should help the child to judge and make decisions and begin,at a simple and concrete level, to explore and analyze his experiences, clarify his values and beliefs and discover how these relate to those held by others. In a plural society children will personally have to face situations where people have different views on such questions as race, religion and behaviour. They may ask the basic questions of how far people can and want to be themselves, something different and individual, and how far people must share common customs and standards of social behaviour.

Values only take on meaning for the individual when they are accepted by him personally. The role of the school is to provide the context in which a child can develop those values that reflect the priorities of a concerned society and at the same time recognize his integrity as an individual.

ATTITUDES

Environmental Studies contributes to the development of positive attitudes towards self and others through investigation, discussion and group experiences. A desirable outcome is the attitude of mutual respect and co-operation that pupils and teacher develop in working together. Group discussion and experiences, guided by the teacher, can help the development of positive ideas and dissolve prejudices. Free discussion and membership in group projects help each individual to feel he is a worthwhile person with a valuable contribution to make, whatever his age and ability.

Environmental Studies has a crucial contribution to make in giving a child a sense of his place in space and time, in a culture which contributes to his identity and which has historical continuity and connection with other cultures, present and past.

Children start with their own family and move outwards in their understanding and loyalties, to Ontario, to Canada and beyond. Each child must retain his identity in and loyalty to his own culture and community yet achieve a full sense of belonging to the diverse Canadian community.

Skills and Competencies

A good program should relate competencies to the needs of children and the purposes of the task. They should be introduced appropriately, applied to real situations and practised. The teacher needs to be alert to the balance between skills; often the resource-reference skills receive emphasis and certain social and graphic skills are neglected. Experience indicates that

- skills and techniques are learned most effectively when the child sees that they are necessary;

- intervention in the form of direct demonstration and/or instruction may be necessary either when a skill is introduced or when it is developed to a more complex level;

- skills are refined and improved by opportunities to practise in a variety of situations;

- instruction and practice should be adapted to the individual ability, style, pace and needs of the child, as well as the requirements of the task;

- skills should not be introduced or practised before they are needed;

- intervention and practice must be flexibly organized for individuals and groups, not necessarily applied to a whole class.

The teacher's concern is to help the child select and sequence skills, to

anticipate the various skills and sub-skills required by the topic under study, and to deal with skills at the appropriate level of

- introduction and establishment;
- systematic application;
- expansion and modification.

THE CHILD AND THE TASK SHOULD BE THE GUIDE, NOT AGE OR A "SKILL PROGRAM".

Competencies are related to the developmental pattern of children. Children in the primary age range have definite upper limits to skills. It seems advisable to establish reasonable levels of expectation and relate these to the needs of the topic rather than spend excessive time on instruction and practice to get small improvements in accuracy of measurement, skill in cutting and glueing, facility in computation. The importance of enabling children to learn competencies from one another through example and imitation as well as by pupil-instruction, should not be overlooked. This emerges as a considerable advantage of group work.

Although competencies are separated in discussion, they clearly interrelate and support one another. It is difficult at times to distinguish between them except in an academic way. A child may apply (1) "techniques of inquiry" but in the process (2) look up a book or use a film-strip and then (3) make a note or a diagram, as (4) part of his accepted role within the group which is carrying out an investigation. The program should encourage this knitting-together of skills to increase the child's repertoire and fluency in selecting appropriate responses.

Environmental Studies involves a wide variety of competencies and skills which are classified here as:

1. - social
2. - group process
3. - inquiry
4. - reference
5. - motor perceptual
6. - mathematical
7. - graphic

as related to the childs total environment both within and beyond the classroom.

1. Social Competencies

Desirable behaviour such as honesty, positive consideration for others and active, social co-operation grow in response to the friendliness and reliability of the teacher and happy reciprocal relations with other children. It is through learning the habits of the group, working and co-operating that children develop satisfying roles for themselves.

2. Group Process Skills

Social and group process skills are closely related. Both are nourished when children are given the opportunity to work

constructively in groups. By discussion, by comparing his experiences and ideas, by arriving at different perspectives and being led to see a greater variety of complexity than his own view, the child extends his understanding and begins to make objective judgments. In the process he acquires many important competencies such as how to listen, how to question and answer, how to understand others. He also uses and develops the social skills of co-operation, role-playing, amd participating, accepting reasonable group norms and decisions. In a well-conducted group, children of varied ability and personality can contribute, and so increase tolerance and self-knowledge. The teacher has the responsibility for guiding children in setting up effective groups and monitoring their development with the above aims in mind. Skills of social interaction and techniques of group discussion can be fostered through skillful intervention by the teacher in allocating appropriate tasks, by diverting aggressive and non-cooperative moves made in the group, by putting together compatible children and above all, giving full opportunity for group discussion.

3. Inquiry Skills

Since both the child and the teacher are influenced by the texture of the teaching and learning environment, it is important that the spectrum of skills grouped under the term 'inquiry' be considered in planning programs. There should be opportunities for:

- the development of competence in observing, classifying, ordering;

- practice in assembling evidence;

- posing and redefining questions into practical forms;

- guessing and testing;

- planning investigations, including checks and controls on field surveys;

- practice in the systematic and critical assessment of each stage of inquiry;

- experience, through group discussion, in deciding what an investigation can do;

- drawing reasonable conclusions.

The major activities involved in developing the skills of inquiry can be orangized under these main headings:

Collecting materials and other data. This has a range of sub-competencies. A major one is the critical capacity to recognize and identify what is relevant. A minor one is the ability to choose an appropriate sampling technique such as catching, growing, sorting, distribution.

Compiling or matching and sorting what has been collected into appropriate and fine enough categories so that it ca- be compared systematically and efficiently. This raises many issues about how children evolve classifications and use information

to help them discriminate and classify.

Interpreting experience in terms of pictures, charts, texts, and other resource material, including samples. This involves classifying, naming and putting material into systematic order which is related to an existing perceptual framework. This is not a simple activity since children have to make judgments about what is similar and relevant, and translate their experience into another system.

Checking information for accuracy and reliability. The need to compare sources and different samples as well as to review critically the procedures and results of experiments, becomes evident as children encounter conflicting evidence.

Reporting in a variety of forms including visual, oral, graphic and written leads to more effective choices of notation and records. These skills should be closely associated with field work through observing, sketching, listing, counting, photography, and making rubbings or casts.

4. Resource-Reference Skills

There is a very close link with Communication which uses Environmental Studies as a vehicle for developing these important skills. Because of genuine interest and immediate need for information the child will learn how

- to read for information which involves: finding the important points in a sentence or a paragraph, finding and using a picture and caption in a standard reference book, learning a notation for counting or graphing;

- to find and use printed, visual or taped material;

- to organize a search for relevant information through use of indices, tables of contents, alphabetical lists and bibliographies.

It should be noted that few of these skills are independent or simple. They serve to link the child's own observations with the materials and objects of the environment. The translation of these impressions into a more objective and socially accepted form, such as language and other symbolism, increases the power of thought through the transfer of one field of experience to another.

5. Motor-Perceptual Skills

These include proficiency in exploring, using and mastering materials and tools to meet the requirements of the task. For example, the skills involved in making a model: cutting, shaping, using a pattern or real object, assembling, choosing size, shape, scale, making plaster casts or rubbings, making maps and plans, using a camera, a tape recorder, a typewriter, a projector and so on, are developed through 'hands on' experiences. While valuable in themselves for everyday life, they also serve more general learning.

6. Mathematical Competencies

Environmental Studies offers many first-hand opportunities for estimating, approximating, measuring, counting, averaging, quantifying and recording in appropriate ways. Different investigations require the use of mathematical instruments and technigues, such as surveying, making a map to scale, making and applying simple mathematical models like the triangle to bridge girder structure.

(Refer to COMMUNICATION)

7. Graphic Skills

The need to make records both in the field and in the classroom encourages children to practise: (i) sketching (ii) taking pictures with a camera: (iii) making diagrams and maps: (iv) the language and use of graphs.

(Refer to THE ARTS and COMMUNICATION)

CONCEPTS AND CONTENT

Major principles of organization and understanding are used by adults to explain the manifold aspects of social and physical events, such as the solar system, gravity, heredity or cellular structure. These basic concepts are in some way or another involved in all children's activities in understanding the environment and may be perceived by them in very concrete or isolated forms. While they are inappropriate and irrelevant as principles to be described, verbalized or memorized by children in the Primary and Junior Divisions, they do provide a framework within which a teacher or group of teachers may plan. The task of designing sufficiently detailed and appropriate courses on these concepts is a complex one. In the case of Environmental Studies, such courses must place a strong emphasis on first hand experiences in the natural environment beyond the classroom.

Learning will follow its own pattern rather than that of a strictly logical sequence within a discipline. It may be helpful for the teacher to bear in mind the disciplines which he as an adult perceives as contributing to a topic. THESE AREAS OF STUDY SHOULD BE IN THE TEACHER'S MIND, NOT THE CHILD'S. They should serve as a cornerstone and guide to "content" and help to balance the areas of learning.

Concepts are NOT TO BE TAUGHT but used as a frame for the teacher to interpret and organize the activities and ideas which are real for children.

The use of concepts is justified only insofar as they have concrete outcomes that give rise to a variety of important questions related one to another.

Children do not think in terms of traditional subjects. Their questions and investigations draw on a variety of concepts of time, measurement, change, materials which cross and re-cross the boundaries of Science and Social Studies. They use a variety of techniques which best meet the current problem - observing, classifying, measuring, making a model, drawing a graph. THE CHILD IS THE INTEGRATING FACTOR.

Criteria for Choosing Content

The child of 4 to 8 has a deep but restricted life, centred on his family, his friends, house, street and familiar places in town or countryside. During the first years, the child responds to the realities that be touches, the neighbourhood within walking distance. He already knows much, in a personal and unsystematic way, about people and things in the locality, but many things still puzzle him. Familiar sights, sounds and happenings can provide a pool of rich experience for the teacher to use. But the very familiarity of the park, mailman, truck-driver or street is an obstacle to the child and the teacher in seeing new interests and new relationships. One basic way in which he learns is by comparing and contrasting his impressions with other children in discussion. Another way, as he becomes more mature, is by comparing his experiences with those he encounters on television and in books. Imaginative experiences, first-hand through play, or second-hand in books, are as important as the realities he touches.

Regardless of the approach to planning the program, the following criteria may be useful in the selection procedure:

A. Is the topic or theme appropriate, relevant and capable of being understood, or will it have to be over-simplified and distorted?

EFFECTIVE LEARNING CONSISTS OF MATCHING THE CHILD AND THE LEARNING SITUATION, HIS LEVEL OF CONCEPTS AND THE DEMANDS OF THE TASK.

There is a danger of over-estimating the child's maturity, background of knowledge and readiness, especially when verbal instruction is used. Equally, there is a danger of underestimating the child's ingenuity, observation and ability to reason in his own terms, and his ability to select the material and situations appropriate for him. The following considerations should be taken as a guide, but not a restriction, in establishing shared goals with children.

1. The historical sense of the child does

not develop before 13 years. It is usually limited to his own generation extending at most to his grandfather's time. His "time line" beyond that is likely to be insecure, and events of widely differing times have a confused relationship, with little or no sense of length or interval of time.

2. The child's concepts of space and time affect his perception of the environment as well as his mathematical understandings. He acquires a grasp of perspective by 9 years, of co-ordinates by 10 years. Time and speed are not clearly distinguished by young children in the Primary Division. The representation of space in diagrams and maps is a mature stage in the child that emerges gradually by the end of the Junior Division.

3. The grasp of geographical concepts is usually limited to concrete understandings, such as his immediate locality, or routes frequently travelled. Greater distances can be grasped only verbally or in imagination until the child reaches the end of the Junior Division.

4. The child can classify, order and relate things quite effectively, with appropriate materials, in the elementary school age range, but his reasoning even at 8 years of age is still concrete and bound to the actual operations he can carry out on things. Up to 6 or 7, he may still be baffled by the discrepancy between the way groups vary in appearance and his ability to count. Even up to 11 years or so, he can handle only simple casual connections or experiment with only two variables at one time (for example, length of pendulum and period of oscillation).

5. The concept that objects remain the same despite changes in their appearance, the identity and stability of substance, is established only about age 7. This concept of identity underlies all scientific thinking and mathematical ideas of number groups and operations. The full understanding of weight does not emerge until after 8 years. The concept of volume, density and associated ideas is not understood until 13 years or later.

6. Understanding of locality and ideas used in environmental studies (i.e. village, town, region, capital city, province) are slow to emerge and may not be understood until 8 or 9 years. Understanding is affected by social background and by opportunities for experience. The understanding of symbols, such as flag and emblem, community and country, are slow to emerge, even at a concrete level. This means that abstract concepts such as region, community, occupation, society are likely to be difficult for the child to relate to his personal experience. Learning situations must ensure that he has many specific and concrete samples

of these concepts at his own level and pace of understanding.

7. The teacher must be aware of the dangers in abstractions, such as election, law, government, authority, and the possible misconceptions a child can have when he can understand only specific examples or, even worse, is merely told about these. Important ideas have to be related directly, but honestly and without distortion through over-simplification, to the child's level of comprehension. They may well have to be explored again and again at higher levels of generalization from stage to stage as the child builds up his basic ideas and tools of analysis from active learning about the environment.

This is yet another reason for emphasizing that the child must lead the way, and for planning learning so that it explores a wide web of experiences, returning to these again and again, not taking up themes grade by grade in a linear fashion and finishing with them.

8. There is no clear division of age between the Primary and Junior Division, but rather of level of understanding of concepts and the amount of relevant experience. Children at the earlier level will tend to collect, classify, to ask What and How questions and be content with explanation at that level. Topics will be more immediate, local and related to personal interests and people.

Older pupils with this preliminary experience will want to order, classify, compare and measure in order to interpret. They will want to ask for reasons, cause and relationship, and conduct simple but controlled experiments to show how an effect varies with conditions. They can work for a longer period, on more specialized aspects of a theme, in groups of 2 or 4 to 6.

Pupils will be more ready for generalizations in the latter part of the Junior Division. For example, noticing the cells in the upper side of torn leaf issues and in onion layers under the microscope, and finding the concept and name "cell" useful at this level of observation. They can conclude that "some plants contain cells". The teacher can help them to become aware of this important idea without their making a premature generalization.

9. The child passes through several stages in understanding social situations, ideas of morality, rules and reciprocity. By six years he can sympathize with the feelings of another child, but it takes him until the end of the Junior Division before he can see situations from another child's point of view.

In learning rules and morality or justice, the child appears to move through stages - first seeing rules as fixed, and having an "eye for an eye" conception of delinquency and justice, and by the end of the Junior Division recognizing that

rules are agreements that achieve some sense of equality and understanding.

It is against this background that the aims of curriculum concerning social behaviour, social skills and the development of self-image are based. Discussions of correct behaviour, of authority, government, justice and the like must be dealt with at appropriate levels of understanding.

In summary, knowledge of children's ways and levels of learning should guide but not restrict the teacher in planning appropriate experiences. The child's stage and level of understanding set limits, but it is not known how far changes in learning situations,materials and approach can raise these limits.

B. Is the knowledge or technique useful? It is important that a child, over a period of time, should build up a coherent body of knowledge IN HIS TERMS. Basic understandings, concepts, information, techniques and skills will be mastered but each child should not have to acquire or retain pieces of information defined by a specific course of study. The body of knowledge will be something specific to the school or even the class. Nevertheless, the similarity of concepts and concerns in children, and regulations in the environment, will mean that there will be many common areas of learning even if children appear to start from many different points. The school should ensure, by recording and staff planning, that themes are not superficial or repetitive.

C. Does the situation or task provide questions, involvement and desire to explore further?

Studies begin with good and first hand experiences. Children are helped by discussion of various kinds:

(a) with the teacher, as a class or group, when a topic is opened up;
(b) in planning activities, discussion with both teacher and other members of the class;
(c) with other children in a group, working out questions, planning and developing investigations, and using resources;
(d) in planning, following through, and using the outcomes of field trips, and
(e) with other children in groups of various sizes in recording, summarizing and reporting findings of an investigation.

It cannot be predicted in detail which experiences or topics will provoke questions and interest or puzzlement, nor can the observations and investigations of children be directed in detail at any specific time.

The teacher must therefore be alert to

confront children with

(a) a wide variety of situations, topics and questions, and
(b) a wide choice of objects and stimuli for observation, manipulation and experiment (experimental material, living things, models, pictures, etc.)

The teacher, from observing his children, will learn which situations are likely to attract them and be profitable. He can also draw ideas (but NOT copy directly, without question) from samples of topics found successful, and from case studies of actual projects. The teacher will find that the locality, the ways in which children learn, the major themes underlying all investigations of environment, will help to provide a framework and direction.

The teacher will need to sympathetically re-phrase children's questions and explanations to make these questions sufficiently specific and practical, to guide their observations or enable them to plan an experiment or survey within reasonable bounds.

(Refer to COMMUNICATION).

The most effective forms of learning follow when children's questions and investigations give the lead, and are aided and guided by the teacher. Too much direction and instruction often leads to a drying-up of original responses by children.

Investigations are best tackled by practical means, backed by the use of a variety of resources and references.

Instruction by the teacher has an important place in:

- raising questions;
- provoking interest in the child by referring to some new topic, piece of news or object;
- using a skilfull variety of questions;
- giving necessary information to augment or enrich their understanding and start them off;
- guiding children in finding or using specific material and encouraging them to move forward on their own.
- instructing children in specific skills such as the use of a tool, or a technique of recording as and when need arises.

D. Does the topic provide first-hand experience?

Even when an activity involves some practical work it can still be second-hand. When a teacher presents a lesson which has occurred in many social studies books, for example, mapping in the local community, the child is not likely to obtain a complete and accurate picture of his local environment without repeated on the spot experiences supported by

relevant follow-up activities.

Well planned field trips and area studies are essential activities for Environmental Studies. Carefully chosen, either may form the first step in the study of a particular topic or may occur as part of a summary or climax. The nearer the area of study is to the school, the better it is in all respects. Many highly stimulating studies are within walking distance of most schools.

Children need to be prepared with
1) adequate background information
2) an inventory of questions or a quiz to answer "on location"
3) a map of the route and the locality
4) a variety of tools for recording; notebook, sketch pads, cameras tape-recorders, etc.

There is little value in a casually-planned excursion if the main purpose is simply to be outside the classroom and travel to some point for undefined experiences. This may be true also when a visit is left entirely in the hands of the host.The question of the size of group arises. In well-planned area or field trips, small groups of children can gather the data relevant to their particular phase of the topic. If whole classes are involved, each group should be aware of the contribution that its aspect has to make to the entire theme. In every case, the experience must also be open to asking

new questions and following up unforseen themes. If an extremely interesting event or topic turns up while children are engaged in one study, the teacher must be prepared to drop everything to catch the urgency of interest. These may range from a dead bird, a fallen tree, a broken window, a house fire, a collision, or the appearance of a celebrity.

To provide a framework for these activities, one special area for field work for each year is recommended. Areas close to the school are the obvious places to start. The area study can deal with: a ravine, a meadow, forest plot; a street, factory or building, a shopping plaza, man-made objects, excavations, machines. Even in down-town areas, plants and animals can be found. By the end of the Primary Division, children can use a simple cross-section to record and analyze their observations. For example, they can peg a string across a piece of ground, varying in soil, dampness and plant life, sample and graph the variations found along that strip.

A street in a city is a natural cross-section of small businesses, factories, stores and dwellings. Sampling can be used with young children when they need to estimate the number of dandelions in a field or the number of bricks in a wall. Techniques such as throwing a hoop randomly to take sample areas of plant growth, or counting bricks in a given area of wall and then estimating can be developed very early in the Primary Division.

Exploring Your Block

Introductory story ... Apt. 3 ... Keats / and discussion

Exploration of block around school in pairs - one partner blindfolded ..... followed by discussion of concepts children wish to explore further

Sights and Sounds

Group One

Keep observation journals of "people patterns"

Read Harriet the Spy

Map light pattern
odour pattern
movement

Explore with cameras, make rubbings of surface and texture

Chart social interaction patterns

Group Two

Keep sound diaries of special sounds possessed by this community

Chart and tabulate
traffic noise
aircraft noise

Interview older residents "What sounds have disappeared?"

Make sound collages using voice
found instruments
tape recorders

Historical Survey

Group Three

Interview residents re:
changes over the years
when houses built
where people come from

Read about the history of the area

Sketch old buildings - can you find a cupola?

If community is new, chart family trees of residents

Administration and Problems

Group Four

Research what zoning permits and prohibits

Observe what services -
- garbage
- sewers
- cleaning

Chart out the "world beneath the block"

Group Five

Read:
Pushcart War
Big Pile of Dirt
Miguel's Mountain

Survey residents re possible
expropriation
high rise development

Discover what citizens groups are functioning

Map out existing problem areas such as traffic dangers

Class discussion and final exhibition of work

Read: Nothing Ever Happens On My Block..... Raskin

Graphing will be a natural means of recording much that is observed:

- amount of vegetation;
- number of insects;
- kinds of stores on a street.

These can be linked with pictorial representations. (Link with COMMUNICATIONS)

In the early years of the Primary Division, the field trip will tend to be a short-term way of opening up interests. Later it becomes a complex operation which gives rise to a very considerable range of topics, for example, a project on crops or transport. There must be time for tinkering, to stand and stare and be quiet amused and joyful.

Out-of-classroom education in the widest sense should proceed throughout the year as a natural extension of classroom activity. The week or two-week visit to an outdoor centre is often the high-light of a school year for senior pupils.

This out-of-classroom study should not be an isolated episode but the climax of a continuous process and more often the beginning of yet another wide variety of topics to pursue.

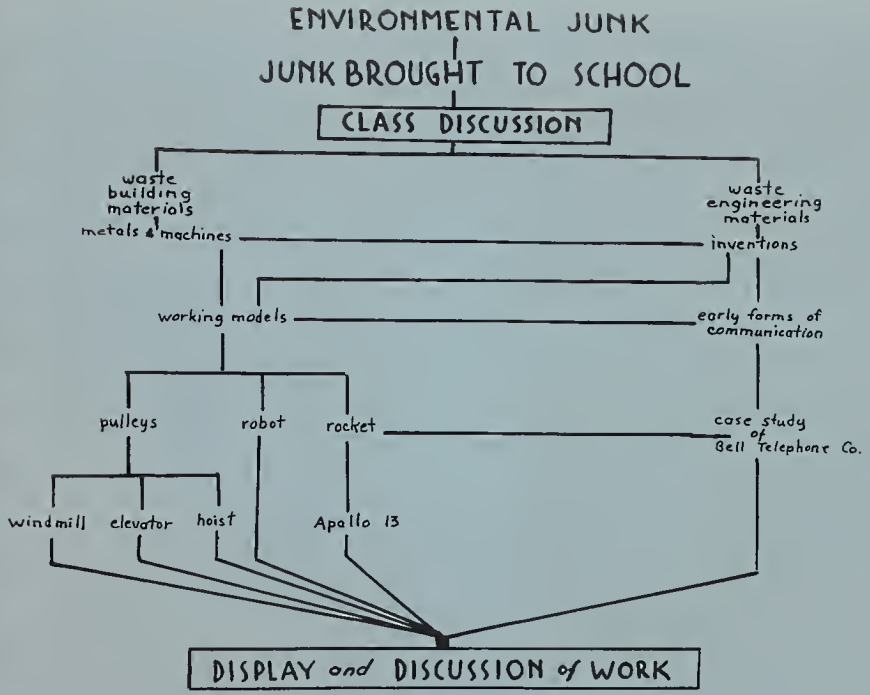
E. Will the program give children the opportunity for direct inquiry, independent study, creative activity, within their own style and pattern of learning?

Will it reach both the younger or less able, both the verbal and the visualizer? Will it create chances for asking questions, using materials, recording and communicating?

Because Environmental Studies demands individualized learning, there must be a continual grouping and regrouping of children. The sequence of events in developing a topic will ultimately involve:

- posing a question, or
- eliciting children's own questions, then
- organizing groups to carry out different aspects of the experiment or survey. Groups can contain children of different ages and abilities, and can be formed in many different ways, including friendship or common interests.

Children need to be given guidance on group formation and helped to find different roles and functions, and to make their individual contributions. The size of the group may range from two to six children, or even an entire class, depending on the nature and stage of the task. It is essential that the various groups come together at the end of a theme or task to exchange ideas and report on their work. Group discussion of questions and tasks, with teacher intervention to stimulate and guide discussion, is likely to be the major framework of a developing topic.


ENVIRONMENTAL JUNK
JUNK BROUGHT TO SCHOOL
CLASS DISCUSSION
waste building materials
metals & machines
waste engineering materials
inventions
working models
early forms of communication
pulleys
robot
rocket
case study of Bell Telephone Co.
windmill
elevator
hoist
Apollo 13
DISPLAY and DISCUSSION of WORK

Planning the program should be a joint venture of children and teacher, Teacher and pupil can bring to the planning a knowledge of what resources are available. Although teachers will accumulate considerable information, as a result of experiences in Environmental Studies, their primary role is to facilitate first-hand investigations rather than act as information centres. They should learn alongside children, helping them to find their identity as persons who know who they are, in terms of both competence and confidence. Learning must be related to personal values and understandings based on appropriate experience.

There may be occasions when the teacher must be prepared to admit ignorance or partial knowledge and find out with the children. There are few certain answers to the basic question "What is the best experience for these children now?". Children provide the clues when they have a chance to respond to a variety of possibilities. These opportunities come from contact with the environment, through interacting with people and examining and experimenting with a wide variety of objects and materials gathered by teacher and children.

The school should take advantage of this early enthusiasm by organizing and stimulating the responses of young children. If the school is to serve the child, it must provide ample opportunities for materials to examine, to touch, to taste, to predict, to guess, to hypothesize, to smell, to feel, to look at, to listen to and to explore, to take apart, to put together, to use and build things with. The child needs a chance to explore and plan at his own level. He also needs the chance to make mistakes and go up blind alleys without penalty.

Within the classroom, children can make their own list of familiar but puzzling things they bring to school or encounter on outside visits. Some items will be included because children have asked questions about them; others because the teacher foresees that questions will be asked and that interesting activities may develop, from for example, the study of the shape, properties and function of a fishing float, a toy boat a 'J' cloth, a sponge.

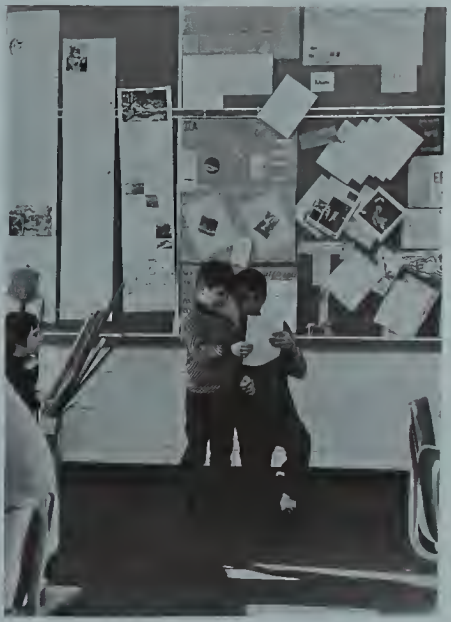
Problem Table and Bulletin Board

It has been usual in many kindergarten and primary classrooms to find nature tables or displays of objects brought in by teacher and children. These displays are often not designed or changed in order to create novelty which stimulates the children to look, taste, feel, smell and ask questions. The problem table has a different function. It is more than a collection of objects with labels and descriptions. Planned for constant novelty, it is a centre designed to provoke questions, with suggestions on where to find answers. These suggestions are graded in difficulty from an "answer" card to which the child can refer directly, to the intricate use of index and reference pages in two or more reference books. Guidance is also

included on finding comparable material in picture files, 35 mm slides, tapes or films. The teacher can use a new display or the introduction of new items to an existing display to spark discussion or investigation. Older children may contribute their own "puzzle" problem material from their investigations, field trips, or work and interests at home.

The bulletin board can display hooked-on objects as well as pictures, photographs, newspaper clippings that will stimulate questioning, observing and writing. (Cross link with COMMUNICATIONS). Schools which have success with environmental mathematics find that it is useful to have a display board and encourage children to contribute speed records, tonnages, and events with mathematical references. Social issues and natural phenomena can be the central focus as well.

It is important that the problem table and the bulletin board be regarded as a joint responsibility by the children and teacher. In selecting items for display they should ask: 1) are they relevant to current interests 2) will they provoke questions or present the familiar in a new way? 3) will they bridge school and the outside? The essential concern is that these areas should change, provide novelty and challenge and not remain either a pretty display of work done or of "curios" collected. THEY ARE WORKING AREAS.



The Contribution of Parents

Parents have a unique contribution to make as resource persons to Environmental Studies. They can

1) represent occupations and roles in the community;
2) provide specialized information in a personal way;
3) seek information or make available services and products;
4) provide access to factories, farms, mines and institutions.

When children work in groups, the assistance of parents as helpers in the classroom is to be welcomed. They can

1. supply specialized skill in art, music, needlework, ceramics
2. help with the technicalities of photography and recording
3. accompany small groups on field trips
4. simply be additional hands, eyes and ears to help busy teachers make prompt responses to individual children.

Parents, grandparents and great-grandparents can provide a rich source of

1. photographs
2. documents
3. letters
4. old books
5. objects which become relevant during investigations

It is interesting for children to tape the narrative of grandparents or senior citizens to make history personal and to compare their perspective with a modern account.

Parents who are immigrants, or represent immigrant groups from other parts of the world, can share first-hand information on ways of life, customs, products of their native country, typical costumes and crafts in a variety of exciting human ways.

There is much to be gained from a continuing, close relationship between

1) a school and its parents
2) a school and its farm
3) a school and its corner store or plaza

Assignment Cards.

Assignment cards are usually designed for use by small groups or individuals. They can be a firm but quite lengthy bridge in moving from whole-class activities to an individualized program. As with all other devices, the value of assignment cards depends of their suitability for the children who use them. The best questions are those that originate with the children themselves. Until they become accustomed to working more independently, the cards can be designed by teachers working alone or in groups, or purchased from commercial sources. Generally each assignment card should incorporate these two principles:

(a) The children must be required to do something; organize investigations, guess and test, establish conditions for comparing, improvize apparatus, etc.

(b) The children must record their work in some way that will communicate their procedures and conclusions; speaking, writing, drawing, graphing etc.

The great difficulty in preparing assignment cards is to write open-ended questions which challenge children to think, yet are unambiguous. It is always possible to close an open question if a child shows that the problem is too difficult for him. Beginning with a closed question may give the child a clue he does not need, thus depriving him of the opportunity to think, and discover for himself. Because the children in any one class vary widely in their abilities to think, it is clear that the assignment or task must be tailored to various levels. The most important outcome is that each child becomes aware that the last step to a solution is his own - however small that step may be.

Textbooks

The practice of providing each classroom with a few copies of several different textbooks rather than a class set of one series improves the quality of the resource and encourages the children to form their own opinions based on their critical reading of different materials. Teacher should be alert to the possibilities provided by old, and, in some respects, obsolete books. These can be cut up and relevant parts incorporated into reference booklets developed by the children. Publishers are beginning to develop smaller books that deal with single topics or narrower bands of material. These permit a more flexible approach to the different aspects of Environmental Studies.

Sharing with other Schools

The outward look of Environmental Studies should realistically extend the horizons of children through close relationship between schools in different parts of the same educational community and in different parts of the province, Canada and even further afield.

Schools can exchange reports of investigations, slides and tapes of their findings or investigations in progress; they can pose and answer questions; individual children and groups can develop pen or tape-friendships such as already exist in many classrooms. In this way, schools can develop real themes in widely varying areas. Instead of using second-hand information about the Arctic or Niagara, schools can study one another's area through the children and teachers. The climax of such exchanges may well be a visit with the visitors conducting a study of their host school and its vicinity.

F. Will the program create opportunities for recording and communicating?

The presence of a rich variety of tools, materials, books and equipment is in itself a stimulus to learning. When these are relevant, varied enough to challenge each pupil, and tastefully positioned or stored within reach of the children many of the difficulties encountered in carrying out Environmental Studies will have been solved through organization. Teachers cannot depend on one set of texts or on any particular kit of materials. To a large extent, the investigations undertaken will generate the need for their own unique and immediately relevant resources and references. This need can be partially met by a core of first-hand resources: for example, handbooks on the geography, minerals, bird and plant life of the locality, guide-books on travel and history, detailed maps, mineral collections, photographs, aerial photographs, basic measuring instruments, films and 35 mm slides of the environment, a catalogue of willing people with particular interests or expertise. Adult materials, as long as they are well illustrated and indexed, may be used with profit. Current accuracy and reliability are the criteria in selection.

There can be no prescription for what there should be in a teaching space to serve the needs of the pupils. A classroom following different topics will need different materials and equipment, some for immediate use and some in handy storage. Separate classrooms will profit from sharing and exchanging a range of equipment which cannot be acquired or stored by one class, or the materials and equipment should form part of the shared area in an "open" teaching space. Some of the following materials and equipment should be available:

- An appropriate variety of means of recording: sketch pads, graph paper, various sizes and texture of papers, ink-markers; portable tape-recorder(s), microphones, Polaroid camera, and, if possible, a 35 mm camera of reasonable standard; material for taking rubbings of bark or raised emblems/lettering; plaster of Paris, plasticine and other media for making casts.
- An appropriate range of collecting tools and containers, many of which can be adapted from kitchen utensils or discarded food containers: bottles, containers, dishes for materials and specimens; plastic bags, sponges, nets, floats, tweezers.
- A range of learning aids: magnifying glasses, a small microscope; mirrors; prisms; safe sources of heat and electricity, tubes, glasses.
- A variety of mathematical and experimental practical materials; measuring rods and tapes, surveyors chain, magnetic compass, thermometers, barometers, balances, clinometer, calipers, pendulum, stopwatch,motors and erection sets for making models and for display purposes and the variety of materials and instruments

associated with environmental mathematics.

- A variety of "science" materials, not already included: bicycle pump, balloons, heat, electricity, wires, weights, cogs and gears, models, common kitchen supplies such as salt, sugar, flour along with chalk, sand and other inexpensive materials. Published science and ecology kits can be used as basic materials but only to suggest and extend "kitchen" supplies.

While the need to differentiate both the size and type of teaching space has been discussed earlier is it useful to emphasize the particular needs of Environmental Studies.

- There should be a suitable working surface for practical work, experimentation, examining, and storing specimens and materials.
- There should be facilities such as aquariums vivaria, cages and containers for keeping healthy a variety of living things: frogs, worms, ants, bees, small mammals and birds.
- There should be a variety of hand tools and a variety of materials to improvise equipment for experimenting or surveying and to make models.
- There should be direct access from the teaching space to the out-of-doors area where plants can be grown and a variety of plant life and ecology studied. Many city schools will lack this. An area of a local park, ravine, woodland or open space could be available as a study area. The school should build up a reserve of resources. These can be contributed by children as well as by teachers, for example, photographs, letters and books donated or loaned by parents and others; tapes of sounds, recordings and interviews obtained during projects, pictures and 35 mm slides of the environment, and information from local and national industries, government departments, consulates, tourist offices and others.

DEVELOPING THE PROGRAM

The major headings (Change & Variation; Community; Comparative Communities: Life, Customs, Adaption; Transportation and Communication; Technology; Maps, Models and Mapping; The Nature of Things) are indicative of some of the major concepts children must tinker with over a period of years, eventually to emerge as being easily understood and readily applied by the young adult. Themes, developed from simple starting points, are suggested under each of these headings. For example, in The Nature of Things, the theme, Aircraft and Space Travel, can begin from such starting points as winged seeds, kites, paper airplanes and birds. This theme, well developed, will not only relate to The Nature of Things, but hopefully will take the child further in his understanding of such concepts as Technology, Interaction, Changing Adaption to Environment, Time, Measurement and Diversity of Life.

CHANGE AND VARIATION

Some changes, such as the melting of frost in sunlight, take only a few minutes. Others, such as the growth of buds, take weeks and months. The themes should be related to children's span of attention and interest. A child of 4 or 7 has difficulty in maintaining interest in the slow growth of a bulb or adult animal. He needs to see the change when it is rapid or maxium. He can see

change in a litter of young animals, because growth is rapid and because he can be involved in feeding and caring. In the Junior Division, children will be capable of more prolonged interest. They may feed and weigh both pet animals and their food to see how they grow and how feeding is related to growth. Daily or weekly change is nearer the grasp of the younger child.

The important themes of seasonal and weather change should be dealt with broadly. Plants grow, produce flowers and seed and decay. Trees move through their cycle of budding, leafing and loss of leaves. As animals and birds respond to feeding, mating, nest-making they show close interdependence with the plant cycle and other animals. Migration and hibernation are major themes which can evolve from concrete investigations and can be related as appropriate then or at a later age with the general concept of adaptation to environment, locality, climate and other animals. Variation in human habits and occupations with the season is another obvious connection; change in clothing, in leisure pursuits. When do people fish, trap, fell trees, gather fuel, harvest? What is the farm cycle? Where is the sun in the winter and in summer? Its path could be traced by older children in the Primary Division and by those in the Junior Division by the weekly sighting of the sun from a fixed point and marking the spot. Where is the Big Dipper, or Orion? When do the Northern Lights occur? Why do we see stars better on a clear frosty night? How can we forecast weather from local signs? Local farmers and trappers might well be "taped" commenting on how they predict and depend on the weather.

What are minimum and maximum temperatures? How is precipitation measured? snowfall? rainfall? How does ice form and what happens when it melts? Why does it crack pipes? Older children could study the air-conditioner's work in relation to their own experiments in allowing water to evaporate from their hands or blowing it dry with a fan? How do people in hot lands keep things cool without refrigerators? Why are there long school vacations in summer?

During the year there will be many events not necessarily connected with the seasons. If leaves are burned in the fall, this may give rise to topics of combustion: what smoke is, what ash is composed of and how "Gramma" made her famous lye soap, or why ash and humus is spread on garden plots. In a city, the same topic might lead to discussion on why burning is banned, issues of pollution, and how garbage and sewage are processed. A transmission line may pass near the school: how are the lines supported? why are the towers of that height and shape? Where do the lines come from and go to? Is there the same principle in an electric circuit made in school? What is a generator: how is a model generator made and how does it function? How does a mechanical shovel or drag line work? What is a hydraulic pump? (experiment with pipes, simple pumps or plungers). What is the section of soil and rock in the trench? What is a pipe made

of, and how is it laid, jointed or welded? What does it carry, from where to where? What changes occur in the environment and what consequences will they have?

Samples of other kinds of changes are: the reproduction and growth of pet animals; evaporation; change of state of salt, soda, and other materials because of exposure to water and heat; transformation of one kind or thing into another; happens to potatoes or apples when cut and left? Oxidation is a difficult concept unless the question is broken down. Decay, and the effects of heat and cold through observation and experiments - leading possibly to a discussion of food preservation and refrigeration. This is turn may lead to technological and historical examples of change, from the seasonal cycle of food-preserving in the pioneer Ontario farmhouse to modern cans and containers. For the city child the investigation could be in reverse order.

Discussion with grandparents and senior citizens would make these examples of change personal, and open up other themes of change in community life in the seasonal cycle, in occupations.

In the city, the changes of season and community are less obvious than rapid change in the demolition and erection of buildings, new roads, changes in local population, how cars become obsolete, how fashions change. The themes listed are only suggested starting points that are likely to arise from the questions of children. The questions children ask are often highly specific, yet require very powerful and general explanations which may be beyond the child's grasp. This is why the teacher intervenes to re-phrase, suggest practical and specific questions which will give relevant answers bearing on the theme. For example, the question "Why does grass grow fast in spring" might best be dealt with by checking on the question itself. Is it possible to measure, by sampling and estimating, how fast grass grows, in selected spots, from week to week? Observation might be made of lawns which have plenty of water and of those which have little. This in turn might link with the observation, graphing, and discussion of rainfall or the effects of melting snow. Children might wish to proceed in quite the reverse direction; they might ask how fast grass and other plants grow in spring, after observing bulbs and trees growing rapidly, and end up with the question-why? Farm children might well include in their learning web the importance of grass and related plants as fodder in the farm cycle of pasture and harvest. Or they might be led to pursue the leads given by winter feed: silage or feed grains or cattle foods imported from other localities or provinces. What happened in the past when there was little winter feed? City children might consider why a playing-field needs time to recuperate from wear, or when a parks department would prepare and plant flowers, getting information from this department and possibly taking field trips to see the cycle of

work. The needs of the community for parks and conservation areas, leisure and conservation might ariae aa diacussion topics with older children.

COMMUNITY

For some children the "community" may be quite small and compact, the apartment, supermarket, street, plaza and park.

Where population is scattered, the community may mean the nearest centre used for shopping, entertainment, services and education.

Studies may begin in the store, during the school bus journey, in the gas-station, viewing the variety of local housing, walking the four streets around the school, interviewing parents about jobs, or any one of a multitude oftopics initiated by the interest of the child.

Half a century ago, when most Canadians lived in rural areas or small towns, it was possible for children to know personally the farmer, butcher, baker, grocer or blacksmith; it was easier to learn about the roles and human relationships which made up the community. With four out of five Ontarians living in communities of over 1,000 inhabitants, the school must help the child to see patterns in his home community and locality.

While the community is a prime focus in the Primary Division, there will be many opportunities for linking the local community with others nearby in the province or throughout Canada and other lands. A centenary celebration in the community or a nearby town, a world event or visiting celebrity, especially if linked with the child's own home background can open up wider horizons.

In studying a variety of local communities and relating them to others farther afield, the teacher should help children begin with some common factors: occupations, services, transportation, and use the ways of representing and recording, which are common to all, the picture, the plan, the model and the map.

COMPARATIVE COMMUNITIES:LIFE,CUSTOMS, ADAPTATION

As the child grows older, topics increasingly involve situations which are further off in space and, to some degree, in time. Some starting points, or points of development on a web of learning are:

1. In almost every class there will be children who have relatives in other provinces, in the U.S.A., in Hungary, Finland, Portugal, Britain or other countries which contribute to the population and cultures of Canada.

Discussion with children of a letter, a stamp, an item of food, or discussion and interviews with parents and display or relevant materials or products, can lead to a homeland study in Scope and Sequence, or to a major topic in an open-system approach.

2. Food, furniture, toys, clothes imported from other provinces or countries can stimulate projects on products (the geography and economics of the breakfast table or store), places of origin of materials and process of production. (What are co flakes made from, how, where did the raw materials come from, where are they made, packaging, distribution?).

3. Achievement by a famous person, past or present can lead to an area study or historical study. It can be shown that inventors, doctors, scientists are "international", yet belong to their own place and time and the circumstances which provoked the problem and the achievement - Jenner and vaccination; Banting and insulin; Fleming and penicillin; Graham Bell and Marconi; The Wright brothers and Whittle's jet engine. Through current affairs and TV older children may touch on the common concerns and difficulties of different areas in the world; conflict in Vietnam; pollution in Canada and the Rhine Valley; poverty and hunger in many parts of the world, in the Americas as well as Asia. But the issue must be related to children's level of understanding, their concrete operational thinking, without distortion and must be treated openly and fairly.

Many schools may wish to frame their topics so that they can relate to Canada, the United States and Latin America as children move through the Junior Division.

Samples of other themes that permit alternative treatments are:

1. A book of explorers, describing how the area in which children now live was discovered, explored and settled. This will differ considerably and yet have many links for the children of Kingston, Sturgeon Falls and Nipigon.

2. An explorers theme might take children afield to Quebec, to Canada's North and West, to the Carribbean, to the Artic and to the Antarctic by means of connected topics of route, map, person and similarity of problem.

3. For Ontario schools near a provincial or state border, a special study of the neighbour might be made. How was that area settled? What occupations and industries are there? What famous people live there or came from there? What relationships are and were there between Ontario and its neighbours?

4. For older children there might be a "patch" study of the locality or other parts of Ontario at some specific point in the past related to their comprehension. An example could be when Mother was in Grade 5 or grandfather was entering school. This could be done by quite specific and concrete study of tapes, material and accounts by grandparent or local inhabitants, compared and linked to the wider provincial or political happenings of the time.

5. Through correspondence and exchange with schools in other parts of Ontario, Canada and further afield children could help develop an area study, or comparative topics in occupations, habits, leisure. This has already been done by some Ontario schools in developing contacts with some schools in the Carribbean Islands.

6. Beginning with nearby examples, children might well study native peoples: Indians, Eskimo of various terrains and localities; their adaptation, customs, and relationship to the major Canadian community. Tracing history backward could raise fundamental issues of the native peoples in the development of a continent i.e. the relationship between the "Neolithic" and the modern age, between hunter and farmer, between nomad and settler.

To study other cultures sympathetically and with understanding but realistically requires considerable attention to comparison and contrast in the process of learning, through simulations and films.

7. Studies might be based on famous Canadians: Samuel de Champlain, Madeleine de Vercheres, Emily Carr, Gabriel Dumont, Simon Fraser, Paul Kane, Lord Beaverbrook, Bethune, and famous Americans who have affected Canadian life and thought.

8. Discussion of products and occupations could lead to study of the history of a business or an industry: pulp mills, steel, salt, rubber, automobile, textile, aerospace; this would normally have strong links with technology as a theme.

9. Study of a product could lead to study of a community involved in growing rubber, chili, rice or cotton.

10. Through their products, and trade links with these areas, children might, towards the end of the Junior Division, make area studies of Trinidad, Venezuela, Argentina, Brazil, Japan, Malaysia, Saudi Arabia, Israel. Connections through parents who come from these areas, or who have gone on vacation there, help to keep topics concrete.

11. A major topic, is the relationships between a town or city and the rural area. Questions of routes, travel to work or weekend cottage, occupations, raw materials and services will arise in the children's terms.

What is important in all the above suggestions is the guarantee that they will not be treated in academic terms, as history, regional geography or population studies, but that they will actively involve children in questioning and genuine experiences. What does not emerge from the limited statement of each theme above is the possibilities each should give for expanding a learning web in many directions, to include historical, geographical, community aspects and connections through surveys and experiments conducted by children. What does an igloo, tent, or tepee do to keep out wind and cold? What other kinds of shelter do men make, and how did they evolve to meet cold, heat, wet conditions? How strong is cotton and how is cloth woven? What does an orange or rubber plant look like? Why does 'sugaring-off' take place in Spring and how is sugar made? What are the similar conditions which permit wild rice to grow in Canada? How can rough paper be made from pulped twigs or straw?

Comparisons might be made, as these arise in looking for differences and similarities, between areas in Ontario Canada and further afield of:

plants
animals
dwellings
methods of farming
the grapes and peaches of Niagara
the cheese factories of Belleville
the fish, game and minerals of the North

Groups of children could profitably work on comparisons, with real and recorded material, of adult and children's games from the present and from grandmother's day, children's books, past and present, ethnic and native costumes, and the reasons for these adaptations, customs

and folklore. Some of these topics in general belong to an older age level if they are to be developed well. As commented earlier, parents and visitors can make these topics much more real through their own accounts and by the display of providing materials.

TRANSPORTATION AND COMMUNICATION

These suggest major themes. They begin with space, and bring in time and historical aspects. Study of local roads and bridges literally leads outwards; it involves questions of local materials for building, geology, landscape, growth of communities and trade; maps become a major tool. A local airport or airstrip can suggest a study of site, air-routes, flight schedules, places served, weather forecasting, time zones and fire-fighting in forest areas.

Air travel suggests analogies with bird migration, routes, countries visited, questions of navigation.

A study of navigation could emerge from or lead to topics such as: trail-blazing, use of sun and stars, use of the magnetic compass and connected map work, importance of time and speed in estimating distance, the ship's log and car's meter. It could lead to discussion of modern aids, radar, inertial navigation in ships and space craft, automatic pilots used in ships using the Seaway or in modern aircraft. Other outcomes might be: How

do cats and dogs find their way home? How do bees "navigate" and what makes them lose their way in cloudy windy weather? How do birds migrate or bats move in darkness? Communications can involve any number of topics, from gesture and Indian signs to smoke signals, from Morse code and early telegraph to radio and television; from pictures to hieroglyphics and early painting - the history of the alphabet; from typewriter to computer; printing, the press and local radio. Children might make string telephones, use and examine microphones and telephone ear-pieces, an elementary "telegraph" with key, circuit and buzzer. They would visit a local press. The effect of communications on historical and rural communities might arise; for example, the telephone and radio in rural Ontario and in Australia; the effects of this aspect of technology on social life, industry and education. Study of communication is in many ways central to a modern child's preparation for the future. Communication is such a central complex that it can give rise to, or is a focal point on many different topics. (Very close links with COMMUNICATION)

TECHNOLOGY

Many areas of study begin with or involve technology. It helps man use and change his environment, it increases his resources by enhancing his strength and speed in addition to extending the range of his perception and control.

Technology is rooted in science and history. The historical continuity of material improvements is often strong. There are also geographical and economic aspects, such as the power of technological advances applied on the production line to change industry and product. Furthermore, the questions of use and value arise; is it worth it or was it worth it? What benefits and powers have followed ? What disadvantages have also come from the application or the misapplication of technology? The basic question of exploitation of resources as against adaptation and conservation is becoming increasingly significant. Children in school today should be concerned with these issues.

Themes in this area often give rise to practical experiment and observation by children; model making, finding analogues and similarities. The basic nature of men, as tool-makers, using tools to make better tools and increase their power, should appeal to children. A practical resource centre will provide many opportunities for children to investigate and practice the use of tools.

The following themes are intended to illustrate the scope and variety of ideas that could be used:

Fire: its uses and control. Fire, fuel, matches, cooking, working metals, distilling, heating and light, bonfires, beacons...

Water: its uses and control. Drinking; irrigation; dissolving and cleaning; the water cycle; power from mills and turbines (models and historical study); domestic water, pipelines (modern and ancient); plumbing and sewage (present day to Roman); steam, water, ice and their uses; engines and industrial change...

Air: breathing and ventilation (experiments with plants and animals); weight; support of light objects - weights and air-resistance leading to consideration of balloons, flight, links with bird study; fans; wind as a source of energy; burning - furnace and fire; sails - how a boat can sail against the wind; the wing of an airplane; fans and propellers, turbines.

Earth: rocks and soils; their effect on human settlements and constructions; materials for building - bricks (experiment in analyzing and making rock,cement and concrete (experiment in making lime?); soil and its composition, effects on landscape and farming (experiments in analyzing soil, dry and in solution); tools and machines, past and present,for working soil); mining; roadmaking, materials and drainage...

Tools: knife, axe, saw,plane: settling and clearing the countryside; clearing the bush in pioneer times; lumbering now; furniture, crafts, neolithic ancestors - scrapers,axes, trade axes for Indians; basic hand tools; modern power tools - forestry, factory...

Wheels: uses of wheels, cogs and gears; transmission, transportation before the wheel; sledge, wedge, roller: development of wheels (has any child seen a cart wheel, let alone seen one made?) - e.g. Upper Canada Village, wood, wire, pressed steel, etc.: carts, cars, bicycles (a whole study in evolution for any one); axles,bearings,lubrication; sizes,speeds; tires (wood to rubber)...

Houses and dwellings: materials, constructions; reasons for choosing sites; walls, windows, doors, roofs and their development; effect of different sites and climates in different countries; foundations, heating, insulation; historic houses in the community or nearby; development of farms and factories to serve their special purposes; tents, huts,igloos,caves; observation of a house being built (a variety of projects in itself); settlements.

Lines, ropes and cables: uses of string; fishing lines; materials, why ropes are twisted or plaited (make a model of string or grass), anchor lines, drag-lines, cranes (models); nets; rope and cable, bridges and the modern "suspension" bridge; wire and steel cable; mineshafts; pianos, guitars and strings; history of ropes, lines and nets. Twisting and spinning (histor-

ical and modern) and preparation of wool, cotton and other textiles for weaving...

Clothes and Footwear: reasons, social and for insulation and protection (experiments with insulation); spinning and weaving as age-old technologies (compare past cottage and present factory methods); weave specimen of own cloth; experiments with stretch,strength and wear; dyes and colours (pioneer and modern), try own experiments; pioneer costumes; costumes of different countries and reasons e.g. loose burnous of Arabia, loose double-fur parka and pants of Eskimo; fashions; uniforms as role symbols and ritual costumes; effects on farming (wool hides),planting (cotton), trapping (furs), exploration of Canada as one consequence of fashion - the "beaver" hat...

Containers: bottles,cans,packages, boxes. Containers in past, crockery, jugs, basins, dishes (oldest domestic technology of pottery) make and fire own coiled, moulded, or, if possible, wheel-thrown, pots; shapes,sizes, uses (dry liquid, storage,cooking etc); bottles - leather, glass (kinds, uses,shapes),plastic; barrels, tubs - past forms, modern bulk delivery truck. Uses of glass,kinds of glass, how glass was probably discovered. Containers as ornaments - vases, jugs, ewers, bottles from the earliest period of man's technology. Boxes, egg containers, packages for fragile goods. Packages in the modern supermarket; packaging as an industry;study of sizes, shapes and capacities of boxes and containers - experiments and maths, to find out most effective or pleasing shapes; metrication in packaging.

Wood and wood products: why wood is used; strength, flexibility; the bow and arrow; the ski and sleigh runner; furniture; containers; frames and buildings - why wood is a good material for houses, where it is used (compare Ontario and Scandinavia); the first plows and harrows; the first cars; distillation of wood to make charcoal (experiment in making charcoal and wood-gas) - the old "charcoal-burner" of legend and modern uses of charcoal - filters,cleaners etc.; wood-pulp and paper (make own rough paper from ground wood fibres, straw etc.) (make own ink or pigment); the origins of paper in China; uses of paper, card,cardboard; Japanese paper screen and houses, writing - clay wax, hides and the technological importance of paper in printing, books, and newspapers; modern newspapers and paper, connection of Canada with U.S.A., Britain, etc. through export of pulp and newsprint; wood products - plywoods, artificial boards, glues resin; jointed and bent wood furniture (back to the bow)...

Steel: iron and steel; steel products in every aspect of life-sheet; pipe, girders, cars,cans,high-rise buildings; pipelines, boilers, chemical plants. Tools - ancient axe to present high-speed lathe; weapons; armour; tanks and caterpillar tractors; how steel is made - furnace, blast, lime-stone, oxygen gas; patterns and casting (and the varieties of casting, past and present in developing tools and castings-

experiments with wax and plaster - plasticine moulds by children); rolling (analogy with clothes-wringer and old mill)sheet; forming shapes,extrusions, cutting, drilling, grinding (old technologies applied to new substance); raw materials - from where? shipping; ore; steelworkers; blacksmith (local steel plant study; visit to local blacksmith or Pioneer Village); rusting, hardness; flexibility - rods and springs; uses of springs...

Foods and food preparation: meals, origins of materials - cornflake, eggs, bread, boiling, roasting,broiling: grains,nuts,berries,meat, fish; modern equivalents of the Neolithic hunter's or farmer's foods; wild and "tame" foods - - control of animals and agriculture; scythe and flail, combine-harvester; methods of preparation - hulling, grinding - the Neolithic hand-quern (a model by children) and flour mills throughout history. Finding food - hunting,trapping,fishing and the techniques needed, gathering berries, nuts, cultivating; taming animals for products - the cow and the Thanksgiving turkey; occupations - farmer, butcher,baker,drover in the past and at present; preserving food - containers, pickling, drying (e.g. pemmican, dried fish of the Middle Ages and present), reasons why food decays or can be preserved; refrigeration and packaging...

Bridges and Roads: location of bridge, why and when; materials and construction (experiments with shapes, girder triangles, bows); bridges down a river (different sizes and functions); bridges and overpasses on a freeway; toll bridges and history, growth of settlements around fords and bridges; trade, travel, strategy - fort and castle near bridge; famous bridge-builders past and present. Direction of road, connections, reasons for being there; when was it made; trails and routes - Indians, voyageurs, pioneers, military roads; alternatives to roads in Canada - the voyageurs' routes; lake, river, canal systems; materials of roads (compare with historical materials), drainage, crown; geography and direction; gradients (work in mathematics, applying gradient concept to graph paper); settlements arising on roads, or creating need for roads (pioneer history, fiction); famous roads of past/Roman roads; mail-coach roads of Britain; Macadam. Map reading and making, elementary surveying (refer to history also for the surveys of sections and lines); map legends and symbols.

Clocks and time: a whole development of topics on time - sequence, duration, measurement Water-clocks (child's own model); hour-glass; candle; early clocks; work on the pendulum; springs and clockwork; measuring time (mathematical, applied number work) now and in history. The sun; sun-dial (why it has to have a

gnomon at a particular angle related to latitude); estimation; pulse-beat; relation to months and seasons; modern watches; stop-watches; need for accurate chronometer in ships conducting the great voyage and similarly, accurate time in space-craft; speeds and velocities - how long it takes to travel; foot,horse, cart, car, bicycle, aeroplane.(Confusion of time and speed by younger children).

Speed measurements: speedometers; speed of sound heard from a distance; thunder; echoes; records...

Meters and calculators: examples of how speeds flows, distance, money etc. are measured. The science and technology of thermometer barometer, humidity measurer; the gas station; calculators - the supermarket at check-out, a hand-calculator; similarities to a bicycle speed and distance meter (relationships of mathematics, base and decimal place); gas and hydro meters; pressure gauges (boiler, tire). Need, in modern society, to measure and monitor many things - water, wind-speeds, hydro, gasoline, heat (Why heat, in a food warehouse? Why heat in cooking or making candy?) Thermostats and automatic switches. The map measurer, converting distance to a reading and to scale (link with work on the trundle-wheel measurer and possibly make or adapt a wheel to measure distances). Scale: this is a more "mature" topic, obviously needing prior experience in measuring proportion and use of instruments for observing and recording.

Electricity: power lines, generators, turbines; application of light and heat; why do industries spring up near a power-station; effects on communities - developing, making life easier, providing power for large and small machines; street lighting; leisure at night; floodlit hockey; refrigeration. Connecting with wind and water power; experience with simple circuits and model magnets, coils and generators...

Heating, Insulation and Refrigeration: or keeping warm and cool, at different times and places. (Experiments on heat rising, reflected, insulated against, evaporation and cooling; clothing; sources of heat and cooling)...

Transportation: horse, bicycle, car, snowmobile. Effects on development of communities, on environment. Routes, seaway, lake.

Floating and sinking: floats.boats,ships; materials (wood, reeds,inflated skins, hollow metal, rubber balloons (dinghies); fast boats and hydroplanes; hovercraft; swimming and diving.

Historical aspects (bridges,swim-floats, boats). Kinds of boat and their adaptation to environment: canoe,kayak,Viking long-ship...

Clearly these issues overlap and intertwine, but they all start or involve important themes bearing on man's mastery of the environment.

There are clear links with COMMUNICATION, and in many instances, the use of materials or discussion of the use of materials for good design will involve ARTS directly and indirectly.

It should be repeated that the actual themes will develop from children's questions and involvement. They may well develop the themes in quite different and ingenious directions, and see different kinds and levels of interconnection.

MAPS, MODELS AND MAPPING

Representation through pictures, sketches, plans and maps is a thread running through Environmental Studies, Communication and the Arts. Older children who have mastered the ideas and techniques involved, co-ordinates, flat space representing reality, direction, scale might appreciate projects dealing with maps and the whole idea of maps at their level of comprehension.

Children, making their own maps, including laying out a grid and painting a huge map of locality, county or province on the playground might look at the ways in which ancient map-makers of Greece and Rome worked. They could look at an Eskimo two-dimensional wood or bone carved "map" of a coastline, and at the maps and charts developed by early explorers of Canada. They would possibly involve topics of compass-bearings, co-ordinates and brief reference (but not understanding) to the concept of latitude and longitude on globe and map. They might get an insight into what Mercator and other projections attempt by projecting light from inside a plastic globe onto a cone or cylinder of tracing paper. They can usefully make a map-model of their area or village, and, with help, make a simple relief map in plywood, styrofoam, papermache or plaster. Looking at sections as they are built up, or taking a cross-section can help older children lay the foundations of ideas related to contour and relief. Children might try to find how the early map-makers got their information (or misinformation) and the assumptions on which they worked and which often misled them. A good example is the Indies, or the Northwest Passage, or the route via the St. Lawrence to China.

The development of their own pictorial symbols and shorthand (link with COMMUNICATION) will make an interesting comparison with the conventions of old map-makers and how these evolved. They will soon see the need for conventional map symbols. Children living near lakes or the seaway may wish to compare charts with maps.

They could re-experience the process of discovery and trial and error, as mountains, rivers, and coastline were gradually charted, then brought to proper scale and orientation. Questions of navigation, time, estimations and distance can arise.

Simulations can have value. For example, where would you put a bridge, a settlement, a road, look for a mill or a mine? Given a simple map with obvious features, could you tell what it would look like from a given place, how it would

be reached, if there is shelter from the wind, if it has trees or a river nearby.

ADDITIONAL TITLES

Famous people and their homelands: children might wish to collect and compare material on the backgrounds of a favourite writer, e.g. Beatrix Potter or Hans Christian Anderson; a famous scientist: Madame Curie; a political leader: or a real or imaginary child: Anne Frank or Heidi. The material should, however, be real and realistic, not sentimentalized and over-simplified. Children might ask whether the country now has the costumes, the windmills, the customs it had when the book was written or the person lived.

Interesting studies can emerge from enjoying exciting children's books set in an understandable period, and using the imaginative experience to reconstruct time, place and things related to the story.

Other titles which can offer starting points: Stamps, Flags or Coins of the World
Music, Art or Drama of different localities or ethnic groups.
Family Names and Backgrounds
A Postage Stamp Country (Monaco, Liechtenstein)
Bananas or Oranges
The Olympic Games - Where? Why? How would you travel there? Whom would you see? Records, People.
Life Under the Water
Comparison of Two Villages
Life on the Coast: British Columbia and the Maritimes.
Life in the High Country: British Columbia, the Sierras, the Andes
Explorations of the Pacific: Cook, Australia, the Islands
North Pole and South Pole

THE NATURE OF THINGS

Environmental Studies in the elementary school is concerned with asking questions, making comparisons, observing with a particular view in mind but trying to avoid being biased or subjective, creating "hypotheses" and investigating these in practical and appropriate ways. It uses the classroom as a workshop, a place for experiment, for storage and observation of living things and specimens.

Outdoor work in a selected field area should extend over the complete year. If a pasture, fencerow or other open habitat is not available, a vacant lot or grassy area near the school should be enclosed, if possible, "conserved" and used for growing things or carrying out experiments as well as observation.

In dealing with plants and other living things, the emphasis is on observing, describing and seeing relationships, not on classifying and naming. Nevertheless, older pupils will, with experience, often use adult reference books effectively to identify living things. Particular interests and enthusiasms can often make individual children alert to certain animals, plants or objects and they can become the "experts" who help others.

The emphasis in every topic should be on raising questions and making good observations, on seeing the thing in its system - What, Where, With what else, When, How, Why? Out-of-Classroom experiences again become imperative.

Here are some possibilities for investigations. Weight and Matter: comparing properties and weights of common materials: clay, limestone, iron, lead, rubber, foam, etc. with arbitrary and then standard units, to build up beginning of concept of weight and density; weighing in water (spring balance) to observe differences; asking why a sponge weighs more when full of water, and estimating the weight of water in it, etc. (See O.T.F. Units on "Matter" and "Measurement").

Crystals: Children can examine crystals in rocks and minerals. With care, they can "grow" crystals out of solutions such as salt or alum. References to faces, edges, vertices, provide links with mathematics. The importance of crystals for decoration and jewellery can be discussed.

Rocks and Fossils link with the

above topic. The different appearances of rocks, apparent hardness, can be discussed and classified; children can collect and compare pebbles, and if suitable abrasive and polishing pads are available, can polish stones. They can be made aware of the rounded glacial rocks of the North and the rounded sand and pebbles as compared with angular forms and splintered edges of recently-broken stone.

Local shales and limestones over a large part of Ontario contain fossils. Museums have dinosaur bones of Canadian origin. These topics can provide a starting point for realizing that there were living things long ago, and suggesting that changes took place, that the landscape was not always as it is now.

Using the Microscope: the child should have an opportunity to use a magnifying glass and microscope in many relevant situations. He can be helped to discover the smaller units - fibres, cells, crystals which compose the materials of the environment. (See the OTF Unit "Microscopy" for suggestions).

Light: Children can experiment with mirrors, lenses, sheets of plastic, bottles of fluid and prisms to discover how light travels in straight lines, reflects, refracts or "bends" in fluid of water, "takes on colour* from a filtering fluid or coloured glass, is broken into a spectrum.

Magnetism and Electricity: Play with magnets and materials of all kinds; magnetizing needles and making a "compass" with a needle, cork and water; attracting and repelling magnets and compass needle; making patterns with iron filings; passing magnet through a coil and circuit to observe momentary response on a simple galvanometer; taking to pieces and studying an old telephone or loudspeaker.

Fruit: Common plants such as apple, tomato, pumpkin, cranberry, will be convenient in the fall; their growth, flowering and fruiting can be studied and the child helped to see similarities. Sunflower and oats give examples of edible seeds. A search for fruit can be made along the fence-row and other habitat used for special study.

Common Fish: Pupils can study the habits and habitat of small native fish, such as catfish or shiners, observe them in an aquarium and relate them to their life and to seasonal change. Other fish and molluscs can be acquired and studied in an aquarium: better still, one aquarium can represent a sample local pond or stream life.

Insects: Mealworms, the larvae of grain beetles, are easily reared, observed and experimented with (response to food, light, heat etd.) With help, children can set up an indoor ant-nest, with one side glass for observation.

The Fencerow Community: Grassland, lawn or pasture as an outdoor laboratory; transects and maps of section being studied in a given area, the population of plants, worms, insects, etc. probes of soil and subsoil, dampness and temperature; different groups of individuals may decide to specialize in looking at things which live under stones, in rotting stumps or swampy ground.

The Pond or Stream Community: This is a classical locale for dipping and netting (but putting back) specimens of water insects, crayfish, fish, making observations of plants and bottom; older children may place living weeds under water in jars to see bubbles of oxygen forming in sunlight. Water insects and pollywogs are obvious aquarium material for study of growth.

Snow: Depth, temperature, dampness, crystals, texture as it changes from time to time; formation of ice; protection of plants.

The most rewarding topics will continue to emerge from children's questions. Previous experience of working in this manner will encourage them to range further and deeper. Themes and topics will often be of local importance. Here are samples of others:

Water: The detailed study of a local water supply, leading to operations such as pumping, filtering, purification, storage and distribution. Children will usually make models when carrying out investigations of fundamental ideas, e.g., filtering. (see the similar topic in Technology).

Soil: Examination of upper soil layers with their plants and vegetation. Links with farming. Pupils could dig a pit to observe the soil profile, and investigate its nature by comparing soil grain size, composition, deposition in water.

They might make a "wormery" to observe how worms feed and turn soil. Conservation issues would follow when pupils realize how relatively thin top-soil is and how slowly constituents turn into soil. They might experiment with artificial "soils" used in potting plants.

Wetlands: The year's field area might be a marsh or edge of a shallow pond, leading to surveys of plant and animal life, to a transect of the area between meadow and lake or stream; the succession, by observing different stages of drying out, of lake, pond, marsh and meadow.

Musical Instruments: Production of sounds by various instruments. Pitch of pipes and glasses; effect of varying length and tension of string. Making simple stringed instruments to pentatonic scale - psaltery, zither.

(Link with THE ARTS and COMMUNICATION).

Effects of Winter: A survey of adaptation of plants, animals, men to winter. Devices used by men to adapt: clothing, heat, transportation, winter foods.

The Bicycle: as an invention: cogs and gears, lubrication, bearings, springs, cable connections, chain drive, air pressure. Experiments on scientific principles; mathematics, or gear rations by practical experiment, ratio of wheel circumferences to diameters. Household gadgets and small electric motors provide similar experiences and principles.

Cells and Circuits: Exploration and experiment leading to ideas of conduction and insulation, switches, heating and lighting effects of electricity, magnetic effect of a coil, uses of an electromagnet; taking to pieces and assembling an electric motor and making simple models. There might be historical links with inventors such as Volta or Edison. There should be a clear link with domestic uses and technology.

Aircraft and Space Travel: Experiments with "lift" - wings and kites; controls (model aircraft). Principles of trajectory, free fall (experiments with objects which do or do not have much air resistance - stones, umbrella (closed, then open), feathers, paper). Jets and rockets (model engines and balloons with air escaping).

Insects and Man: Study of insects (or animals) with local economic importance; tent caterpillar, spruce budworm, wasp, blackfly, bumble bee, mosquito. Adaptation (food, enemies), seasonal variation, growth control of pests, or ecological balance. Related occupations, farming, fruits.

Conservation of Natural Resources: Study of areas of particular local interest in terms of soil (use and erosion) stream and lake (balance of living things, changes occurring, leisure pursuits); forest, local plants or animals. Adoption by a school, if possible of a particular wood lot or other area.

Study of Plants and Animals: A constant theme should be the observation of living material in the classroom, or field area. The growth pattern of beans, bulbs and oats, or maples and pines, are examples. Within the classroom, children can experiment with different conditions of soil, light and darkness, water and temperature.

Growth can be graphed. Similarly, the habits, feeding, sleeping, reproduction of small pet mammals or hatching and growth of chicks can be studied in detail; more general themes might connect with domestic animals such as dog, cat, duck, cow and their variations and ancestry.

The Weather and Weather Station: Use of simple instruments to record systematically, predict, compare with radio predictions, compare with weather readings at meteorological stations or other schools.

Circular 14 contains the titles of textbooks approved for use in Ontario schools.

Circular 15: Canadian Curriculum Materials lists books, filmstrips, films, recordings and other teaching aids that can be used in conjunction with this guideline.

Brehm, S. A Teachers' Handbook for Study Out-of-Classroom. Columbus, Ohio: Charles E. Merrill, 1969.
This book is a useful teacher's guide for out-of classroom studies.

Carpenter, Helen McCracken. Skill Development in Social Studies. (Thirty-third Yearbook of the National Council for the Social Studies.) Washington: N.C.S.S., 1963.
This discussion of skills is appropriate for any year level; it includes some suggestions for evaluating skill development.

Ennever, L. and Harlen, W. With Objectives in Mind. London: Macdonald Educational, 1972.
This book in the 'Science 5/13' series describes the implications of Piaget's work on setting educational objectives for children.

Fair, Jean, and Shaftel, Fannie R. (ed.) Effective Thinking in the Social Studies. (Thirty-seventh Yearbook of the National Council for the Social Studies). Washington: N.C.S.S., 1967. Informed thinking about important societal concerns through an inquiry approach is the focus of this book.

Harris, M. Environmental Studies. London: Macmillan, 1971. This 40-page booklet provides practical suggestions on how Environmental Studies may be approached for children, aged 6 to 12.

James, Charity. Young Lives at Stake. London: Colling, 1969. Direct suggestions for curriculum planning that is focused on the learner are included in this book.

Lawton, D., Campbell, J., and Burkitt, V. Social Studies 8-13. London: Evans/Methuen Educational, 1971.
This Schools Council Working Paper (39) includes approaches to social studies and assistance in setting objectives and developing programs.

Lines, C. J., and Bolwell, L. H. Teaching Environmental Studies in the Primary School. London: Ginn and Company, 1971. This 80-page handbook includes materials on the nature of Environmental Studies, the role of the teacher, the place of Environmental Studies in the curriculum, the organization of a study, evaluation of children's progress and ways by which teachers can extend and develop their own knowledge and techniques.

Massey, Norman B. Patterns for the Teaching of Science, rev. ed. Toronto: The Macmillan Co. of Canada Ltd., 1969. The novice teacher will find this guide useful for many techniques and procedures which apply to Environmental Studies.

Metcalf, Lawrence E. (ed.) Values Education: Rationale, Strategies and Procedures. (41st Yearbook of the National Council for the Social Studies), Washington: N.C.S.S., 1971. Suggestions for identifying and clarifying value questions and value conflicts are outlined in this book.

Ontario Association for Curriculum Development. Values in the Classroom. (Twentieth Annual Conference). Toronto: O.A.C.D., 1971.
Conference sessions of the O.A.C.D. are reported for teachers consideration.

Ontario Institute for Studies in Education. OISE Science Units for Elementary School. Kingston: Ontario Teachers' Federation, 797 Princess Street.
"Matter" (no prerequisites); "Measurement" (to follow prerequisites); "Microscopy" ("Matter" is prerequisite); "Comparing Animals" (no prerequisites).
Each of these units consists of a teacher's manual and a kit of equipment for use by approximately forty pupils. No written materials have been prepared for pupil use. The units are designed to serve as samples to assist teachers who wish to develop their own units of investigation consistent with the philosophy of science education as outlined in Part III of New Designs for Learning: Highlights of the Report of the Ontario Curriculum Institute, 1963-1966, edited by Brian Burnham and published for OISE by the University of Toronto Press in 1967.

Ontario Teachers' Federation. A Classroom Extension, 200 Outside Science Activities. Toronto: Ontario Teachers' Federation, 1969.
This book contains many practical suggestions for out-of-classroom activities.

Ontario Teachers' Federation. Outdoor Education Manuals, Parts I and II. Toronto: Ontario Teachers' Federation, 1971.
These two manuals contain hundreds of ideas for out-of-classroom experiences.

Ontario Teachers' Federation. Report on Science Books. Toronto: Ontario Teachers' Federation, 1972.
This catalogue lists learning resources, cost and sources. French-language materials are also included.

Province of Alberta. Experiences in Decision Making. Edmonton: Province of Alberta, Department of Education, 1971.
This handbook for teachers includes six detailed sample units developed to help children clarify their values and make decisions.

Radford, D. Science from Toys. London: Macdonald Educational, 1972.
This handbook is one of a series produced by the Schools Council 'Science 5/13' series. Many useful illustrations are included on how children can explore toys from a science perspective.

Raths, Louis E., Harman, Merrill, and Simon, Sidney B. Values and Teaching: Working with Values in the Classroom. Columbus, Ohio: Charles E. Merrill, 1966.
Values and value clarification are related to classroom practice.

Richards, R. Early Experiences. London: Macdonald Educational, 1972.
This 100-page book presents many possible investigations with a science perspective.

Sankey, J. A Guide to Field Biology. London: Longmans, 1958.
This book is a source book of field techniques.

Science Teachers' Association of Ontario and Ontario Teachers' Federation. Catalogue of Curriculum Resources. Toronto: Ontario Teachers' Federation, (797 Princess Street, Kingston), 1972.

This is an annotated bibliography of the many booklets available from the Ontario Teachers' Federation.

Shaw, P. Science. London: M acMillan, 1972.

This Schools Council Publication describes the science component in the curriculum of British Primary Schools. It emphasizes the study of the environment in practical terms.